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# ARCHIVES OF PEDIATRICS.

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## Original Communications.

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### ON THE CLASSIFICATION OF THE TICS OR HABIT MOVEMENTS.\*

BY WILLIAM OSLER, M.D.,

Professor of Medicine, Johns Hopkins University.

Linnæus "who found botany a chaos, and left it a cosmos," is said to have had the courage to write a treatise on the *Genera Morborum*. While the present condition of the classification of disease can hardly be called chaotic, yet order and system are necessarily lacking in the absence of a fuller knowledge than we now possess of the mutual relations of various disorders. There are, indeed, insuperable difficulties in the way of any broad systematic arrangement upon a basis either etiological or anatomical. Meanwhile, we jog along in an aimless fashion, ticketing the maladies according to their seeming similarity, adding daily to the existing complexity, and waiting for some twentieth century Linnæus with a genius for classification.

Nowhere is the confusion more evident than in the classification of diseases of the nervous system, particularly in the disorders characterized by abnormal movements. Even in an affection so well studied as chorea, it is very difficult to make a classification that will meet with universal approval. How can it be otherwise? We are by no means unanimous, either as to the nature of chorea minor, or as to the relations of other motor affections to it; for example, of the chronic progressive chorea of Huntingdon, which is regarded by most writers, and I think correctly, as separate and distinct from Sydenham's chorea; while Charcot and his pupils hold that it is only a variety.

Important studies have been made of late years upon the group of muscular disorders which have been described as

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\* Read before the American Pediatric Society, Montreal, May 25, 1896.

pseudo-choreas or habit spasms, and, in extending to them the name of Tic, the Salpêtrière school has developed a nomenclature and division somewhat confusing to Anglo-American ears. With our notions of the word tic applied to either the mimic spasm of the facial nerve—tic non-douloureux, or to neuralgia of the trigeminus—tic douloureux, it is a novel extension to hear such phrases as *la nèvrose tiqueuse*, *la maladie des tics convulsif*, *ticquer*, *tic psychique* and *tics coördonnés*. With the exception of Dana, recent authors of works on diseases of the nervous system, have not adopted either the nomenclature or the division recognized by the Salpêtrière school. It has certainly advantages, particularly in enabling us to separate a number of the spasmodic affections of children from chorea minor. The disadvantage lies in the use of a name already attached to two well-known and totally different affections, the spasm of the facial nerve and the neuralgia of the trigeminus. Still there need be no confusion in reality. The facial tic, like the spinal accessory and the hypoglossus spasms, differs entirely from the habit spasm, in as much as the convulsive seizures are situated within the domain of a definite nerve, and there is generally some lesion, central or peripheral.

The employment of the word with a significance different from that to which we are accustomed, is compensated for by the advantage of placing under it a group of allied affections which pass insensibly into one another, from a simple, habitual, conscious spasm of the facial muscles, to complex coördinated movements with marked psychical features, or to habit phenomena purely psychical. The distinguishing factor in the entire group is the habit or repetition, whether of motion or of idea, which, while influenced or controlled to some extent by the will, occurs in response to a sort of impulsion in the case of muscular movements, and in the case of imperative ideas as a sort of obsession.

The following is the classification of the tics adopted by recent French writers.\*

1. Simple tic or habit spasm. These are the common cases of spasmodic movement, chiefly of the facial muscles, which are, to a certain extent, under the control of the will. In very many of these cases the affection seems to begin as a childish trick.

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\* See particularly Noir *Étude sur les Tics*. Paris, 1893.



The muscles of the face and of the neck are most commonly involved, then those of the shoulder girdle and arms, less frequently those of the legs. The cases are very often confounded with chorea minor, from which they are distinguished by the much greater brusqueness of the movements, which have a lightning-like rapidity. They are also more or less systematic, limited to certain muscle groups, as of the face and neck, or of the shoulder girdle muscles and platysma, or the muscles of the thigh. In many of the cases there are sources of irritation, such as adenoids or errors of refraction, relief of which may be followed rapidly by cure. In addition to these localized forms, here may be also grouped as a generalized tic or habit spasm, those interesting cases in which there are sudden electric-like jerkings of the muscles of the trunk and extremities, making the patient start for an instant, but which pass away with great rapidity. Both children and adults are affected, and Hensch has described the condition as electric chorea—not a very suitable name, since this has been applied to the totally different affection known as Dubini's disease, met with in Lombardy. The condition may persist for many years, and in my monograph, *On Chorea and Choreiform Affections*, I have recorded several interesting cases. These habit spasms, whether local or general, often resist all methods of treatment, and, while never dangerous, are extremely annoying and a source of great worry to the unfortunate subjects. They should not be confounded with chorea, nor should that term be applied to them, but they are best designated either by the term habit spasm or simple tic.

2. Tics with super-added psychical phenomena, *Maladie de la Tic Convulsif* or Gilles de la Tourette's Disease. The study of these cases by Gilles de la Tourette, and by others of Charcot's pupils, really led to the extension of our knowledge on the subject of these curious affections. In this form, in addition to the ordinary motor disturbances of simple tic or habit spasm, there are explosive utterances and cries, and imperative ideas. Of these the anomalies of expression are the most interesting. There may be simply explosive exclamations, which are most frequent, or obscene words may be spoken, usually at the time of the movement—the so-called coprolalia; or a word heard is repeated a number of times, or some one word is said over and over again, for which habit the term echolalia has been invented. In other instances actions are mimicked—echokinesia, and it seems

probable that the jumping disease of Maine, the Latah of the Malays, and the Myriachit of Siberia, all of which affections are characterized by this condition of *echomatism*, come really under the category of the *tic convulsif* of Gilles de la Tourette. But the most interesting, as well as the most distressing feature of this variety of tic is the remarkable mental state, usually some form of obsession or imperative idea. They are very varied; many of them are the modifications of the various *phobias*, for which so many names have been invented, agoraphobia, topophobia, claustrophobia, haphephobia, etc. Or there may be the curious conditions of onomatomania, or of arithmomania, or in other instances the mental state is that of *folie du doute* or the *délire du toucher*; interesting cases of these I have given in the monograph already referred to.

3. Complex, coördinated tics. By far the best account of these is given in the exhaustive article on Tics by Noir, writing from Bourneville's clinic. Many are forms of habit movements which differ, however, from the simple tic in the more complex character of the action performed, which may be one of everyday life, but which is repeated without obvious cause, and which, in most instances, can be controlled by an effort of the will. Some of the more complex movements do not differ at all from ordinary tricks, or the complex movements may occur in connection with ordinary habit spasm, as in a child who always before taking anything in the hand, first smelt and then blew upon it; or a boy with facial tic, who had the habit of biting the middle finger, and at the same time pressing the point of the nose with the index finger. Some such tricks in children as head-nodding, head-swaying and head-banging, come in this category. In feeble-minded children one sees a very extended series of these complex coördinated movements, of which a very excellent account has been given by Noir, particularly the balancing, the jumping, the rotation of the head and the rhythmical beating of the head or of the chest with the fist. The movements are usually rhythmical in character. Sometimes a series of actions is performed from time to time in orderly sequence, such as stooping from the chair, lying prone upon the floor, raising the hands above the head, etc.

And, lastly in this group, come most appropriately those extraordinary bizarre movements, which may be repeated from time to time for a series of years, sometimes in association with

explosive utterances, or with imperative ideas, as the extraordinary case of pendulum spasm reported some years ago by Mitchell.

4. Tic psychique. An imperative idea is the psychical equivalent of, and has an origin similar to, the motor tic. The *idée fixe* impelling the victim to touch a certain object, or causing him to be haunted by a dread of the use of certain words, or making him count so many numbers before he can do a certain act, is the counterpart of the irresistible musculature which leads to the constant repetition of one of the many acts which we have been considering. The two processes are as we have seen, often though not necessarily associated, and in some of the subjects of imperative ideas the motor features are marked. In any of the cases the psychic tic is as harmless as are the slighter forms of the motor variety. Dr. Hack Tuke has called attention in a valuable paper to the trifling character of a large number of the imperative ideas. They may be present for years without delusions, recurring automatically, often proving a source of worry, but rarely becoming more serious than other of the many every-day ideas which from habit we entertain.

The following works may be consulted: Gilles de la Tourette's *Archives de Neurologie*, 1885; Guinon, *Dict. Encyclopedique, Article Tic*, 1887; Charcot, *Leçons du Mardi*, 1887-88, 1888-89; and in his last lectures, 1893, edited by Guinon; Noir, *Étude sur les Tic*, 1893; D. Hack Tuke, *Brain, Part Second*, 1894; Dana, *Text-book of Nervous Diseases, Second Edition*, 1894; Osler, *Chorea and Choreiform Affections*, 1894.

## ELIMINATION AS AN ETIOLOGICAL FACTOR OF DISEASES OF THE ALIMENTARY CANAL.\*

BY F. FORCHHEIMER, M.D.,

Professor of the Diseases of Children, Medical College of Ohio, University of Cincinnati, Cincinnati.

The process to which I wish to call attention is one that is universally accepted at the present day, so that from a physiological standpoint, there is no doubt of its existence. As to its practical application, it has seemed to me that it is very manifold and not limited to the mucous membrane of the alimentary canal, but a function of all mucous membranes. It is not within the scope of this paper to discuss this general applicability of the principle; it shall be my object to point out a few instances in the various sections of the alimentary canal where this principle becomes operative.

The term elimination has been chosen because the process, strictly speaking, is neither one of secretion nor of excretion, although both of these terms have been applied to it. During the process of secretion a mucous membrane may eliminate from the circulation substances of various kinds, which substances may be secretory or excretory, or neither. The substances that we refer to are certainly not destined to perform any physiological functions in the body, therefore, not secretory as a rule, they are not waste products; therefore, not excretory, it will be convenient to use the term eliminative for them. The greater the amount of secretion, the greater the amount of elimination; so that, as far as our researches go, it has been shown that the latter process goes on with least activity in the large intestine. It would almost seem that the actual amount of eliminative function had something to do with the determination of the frequency of pathological processes in the mouth, the stomach, the small intestine, and the rectum. It seems, furthermore, to be true that elimination takes place most actively in those sections of the alimentary canal in which absorption is

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\* Read by Title before the American Pediatric Society, Montreal, May 25, 1896.



least developed. This fact seems to depend for its explanation upon the relation of secretion to absorption.

The substances that have been found to be eliminated are of very varied nature; metals, salts, alkaloids, ptomaines, leucomaines, coloring matter, all may be eliminated by the mucous membranes of the alimentary canal.

The question how any given substance, found in the economy, may be eliminated by a mucous membrane, must still be left unanswered. It is highly probable that, as in the general metabolism, the one substance is a respiratory eliminative, the other a digestive eliminative, the third an excretory eliminative, because it is eliminated especially by the mucous membrane of one or the other apparatus. In a series of experiments that I have been engaged upon, I have tried to determine something about the mechanism of elimination. The substance to be eliminated was a non-toxic coloring matter; as far as the alimentary canal was concerned, it mattered not whether this coloring matter was injected into the arteries, the veins or the lymphatic spaces of a rabbit, it seemed to appear in the same quantities in the lumen of the intestine. So that the conclusion could be fairly drawn, that, wherever the substance to be eliminated was formed, it could be eliminated by the intestine. On account of technical imperfections of the method, it was impossible to determine the tissues that were involved in elimination. It is highly probable however, that substances vary in this respect, as has been suggested before. For our present contention we must disregard the origin, and, to a certain extent, the nature of the bodies to be eliminated; therefore, that most interesting process first described by Brown Sequard, and elaborated by d'Arsonval and others, internal secretion.

Depending upon the nature of the body eliminated, the diseased process must of necessity vary; an inflammation of different degrees of intensity, a functional disturbance, or no disturbance at all. Again, remote disturbances may be ascribed to this process if it be remembered that these eliminated substances may again be absorbed, that while this may not injure the mucous membrane primarily, they may do harm to the cells of other tissues, or effect chemical changes of great importance, being changed so that when they again come back to any mucous membrane, they secondarily may become capable of producing damage. If we then take this principle of elimination

into consideration, we have before us a nice problem involving the question of secretion, auto-infection, excretion and, secondarily, the whole metabolism of the body.

As far as the mucous membrane is concerned, a substance of this sort can produce a lesion or disturbance either upon its first or subsequent appearance upon the mucous membrane, and *vice versa*. Indeed, we know of substances which are toxic when first eliminated, become absorbed, then changed in the economy to be returned as harmless bodies. See the relation of ammonium carbamate to urea.

Turning now to the various sections of the alimentary canal, we will find very many examples of disease due entirely to eliminative processes. The mouth has very little activity as far as digestion or absorption is concerned, therefore we would expect elimination to be of the utmost importance in the production of disease in this locality. As far as experimental evidence goes, we know that many substances are eliminated by the glands of the mouth; metals, salts, and organic products. There can be no doubt of the fact that the condition that precedes some forms of stomatitis (stomatitis hyphomycetica, stomatitis ulcerosa) is due to an irritation following the elimination of substances that have as yet eluded detection. It is a well-established fact that stomatitis is frequently associated with gastro-intestinal disturbances, and it has seemed very improbable that an inflammation could extend from the small intestine, by some unknown connecting substance, directly to the mouth and then produce an inflammation. Bacteriological research has not been able to help us much in the determination of the etiological factors for stomatitis, as the bacterial forms were found to be mostly the ordinary ones of inflammation. The fact that the soil must be properly prepared before the bacterial activity can take place, has been pointed out by me in my book on "Diseases of the Mouth." Stomatitis ulcerosa is a disease whose cause is accepted as being the existence of a proper soil upon which some irritant or irritants produce inflammation of a peculiar nature (necrobiotic). If we analyze these conditions we will find three factors: the presence of teeth (mechanical), the elimination of certain substances, and lastly, though possibly not essential, the presence of certain lower forms of life. Eliminative inflammation is accepted in this form of disease for those cases due to mercurial, arsenical, iodine, and lead poisoning. Another

chemical disease, scurvy, can be safely added to this list, and when chemistry advances still further, there can be no doubt but that all forms of stomatitis ulcerosa will be found to be primarily an eliminative inflammation. In this connection I wish to draw attention to the constitutional origin of that form of disease that resembles stomatitis ulcerosa, but chronic in nature, Riggs' disease or pyorrhœa alveolaris. It has long been conceded by dentists that there is something more than a local cause for this disease, and their futile attempts at treatment must be ascribed to the fact that they were not in a position to treat anything more than the local manifestations. Now that the dentist is calling on the physician to determine the general cause, the results of treatment are becoming very promising. But what do we find as general causes for this disease? Only such as produce certain foreign chemical substances, or are produced by such substances circulating in the blood, and the mechanism is simply that of elimination as in stomatitis ulcerosa. Of these substances uric acid seems to be the principal offender. It has been found by Boucheron in the saliva, and while I am far from accepting much that has been written upon uric acid as a cause of disease, it can be safely admitted that uric acid, locally, does produce inflammations. The various forms of anæmia, malaria, diabetes, also act causitively, and that in each of these diseases chemical substances are produced, need not be alluded to more extensively. Stomatitis herpetica seems to be conclusively determined upon as an eliminative disease by the interesting observations of Friedrich, and, parenthetically, it may be stated that the nomenclature of our society has been fully vindicated in calling stomatitis aphthosa a herpes. Friedrich (Berl. Klin. Woch. No. 49 and 50) in the course of some experiments made with the proteins and toxalbumins of streptococcus and the bacillus prodigiosus as used by Coley, was able to produce herpes facialis in seven cases, in two of which the herpes also appeared within the mouth.

The accepted functions of the mucous membrane of the stomach can be arranged in the following order as to importance: secretion, elimination, absorption. It is difficult to rate the eliminative function as to quantity, but it will probably be found to be the second one in importance. It would carry us too far if we were to review the history of the change in opinion among physiologists concerning the functions of the stomach in the



human being. It will be necessary, however, to give a few facts pointing to the importance of considering the stomach as an eliminating organ, which, as yet, have not been taken up by the text-book on physiology. It has been found that a great variety of substances is eliminated by the stomach, discovered first in the natural course of repeated chemical examinations according to the methods of Leube, Ewald, and others, then worked out as the result of preconceived notions concerning this function of the stomach. In the latter way, and possibly to serve as a paradigm, I found some remarkable things concerning the elimination of arsenic by the stomach. Arsenic is eliminated by the stomach in large quantities, is then absorbed, and again eliminated, and this continues for weeks in acute cases of arsenical poisoning, so that, even by means of the coarsest tests for arsenic, this substance can be detected in washings from the stomach. In one way or another the following substances have been found as eliminated in the stomach: manganese (Cahn), arsenic (myself), uric acid (Boucheron), xanthin (Rachford), a ptomaine with the action of strychnine (Brieger), morphia and the cholera toxin (Alt), organic alkaloids in auto-intoxication and absorption-sepsis (Albu). The mucous membrane of the stomach seems to react in a peculiar manner; thus while manganese and arsenic are eliminated, as yet I have failed to detect lead in the stomach contents of patients with lead poisoning. On the other hand, it seems to be able to separate organic compounds of widely different natures, and herein lies the importance of recognizing this function of the stomach. The stomach tube has been accepted quite universally by the profession. It has been used indiscriminately in any condition which seemed to warrant the supposition of change in gastric digestion, and most commonly with excellent results. The most important function of lavage has been overlooked, however, viz., that of removing something from the stomach which has been secreted into it and eliminated from the general circulation. Lavage in cholera infantum offers most inconstant results—sometimes most brilliant, more so than by any other method of treatment, and that occurs when both the cause of the disease (bad milk, bacterial contents) and its results (eliminated substances) are removed from the stomach. This would occur early in the disease: or the result may be excellent in those cases in which the origin of the disease is neither chemical nor bacterial, *i.e.*, as far as the primary contents



of the gastro-intestinal cause is concerned, but due to elimination into the latter as the result of some process generally metabolic. The mechanism of the production of cholera infantum, as the result of great heat, concerning whose existence there has never been any doubt in my own mind, can be most satisfactorily explained by taking elimination into consideration. Lastly, there are those cases of cholera infantum that are only temporarily benefited as far as vomiting, general condition, and general results are concerned. These are the cases in which the cause is not reached, and the lavage acts only palliatively, for the poison continues to act continuously.

A great many acute gastric conditions concomitant with other diseases will undoubtedly be explained on the principle of elimination. The vomiting of the acute infectious diseases must undoubtedly be brought partially under this heading. The gastric disturbances of trouble of the lower sections of the bowels, the vomiting of constipated children, for instance, which is frequently considered mechanical, is due purely to auto-infection and an attempt at elimination by the stomach.

It would be going too far to do more than suggest that a great many of the chronic or sub-acute gastric disturbances in children are simply due to the same process, and not to disturbances in secretion of gastric juice, pepsin or what not. It is for this reason that direct treatment of the stomach has offered such good results, because in nearly all instances, lavage is an essential part of the treatment. Clinicians know that the gastro-intestinal troubles of rickets, tuberculosis, so-called gout, must be treated by applying remedies to the cause. At the same time most excellent temporary results are obtained by continuous lavage.

In the small intestine the conditions are most unfavorable for study and conclusion for the present. It must be remembered that the physiology of the small intestine in man, is, comparatively, an unopened book; with the exception of the observations in Busch's classical case, comparatively little is known positively. In addition, the normal processes are so complex, the juices and contents are so many, bile, succus entericus, pancreatic juice, the chyme, that conclusions must be carefully sifted before they can be accepted. If we take the bile and see what extraneous substances has been found in it, we will see how this fluid must be eliminative par excellence. Thus, there may be found metals,

iron, copper, arsenic, salts, iodides, bromides, sulphides, sodium salicylate: of organic substances, carbolic acid, urea, turpentine, leucin and tyrosin, albumins, cane and grape sugar and other substances. The small intestine eliminates calcium and iron (Voit, Rey, Buchheim and Meyer), iodine, bromine, lithium, arsenious and boric acids, iron salts, (Landois and Sterling); manganese (Cahn). Brandenburg has found that uric acid formation has some connection with the secretory function of the intestine, and Weintraud goes so far as to state that the precursors of uric acid, which are formed from nuclein derivates, are secreted into the intestinal canal, then reabsorbed and finally changed into uric acid. In so simple an experiment as the determination of the place of elimination for Heidenhain's sulphoindigotic carmine, I was at first thwarted by the complex conditions in the small intestine. But this experiment was, primarily, for the purpose of purely theoretical considerations. Here we wish to establish the fact that conditions in the small intestine are very favorable for elimination, but that, at present, we have not a very satisfactory basis upon which we can build practical results. If we look at the great number of substances eliminated by the bile, it will be seen how important this function must be for this juice. If then we follow the rules used before, and take into consideration the great quantity of fluid secreted in the mucous membrane of the small intestine, we will also have to come to the same conclusion as to the succuss entericus. The difficulty however, lies in the isolation of substances at the place in which they are found, which, to a certain extent, is necessary to prove the position taken as to elimination. If we draw conclusions as to the importance of the function, as the result of years of accumulated therapeutical experience, it will not be difficult to establish the fact. The cures of diseases of various kinds, the relief given to uremic conditions, the treatment of certain kinds of intoxications by prolonged catharsis, all point to the importance of this function in the small intestine. It is not an uncommon practice, and frequently a very good one, to begin the treatment of an acute gastro-intestinal disorder by giving a laxative. No doubt the *materies peccans* is removed by this method, *i.e.*, the primary cause of the trouble, if it be a lower form of life. But we must not lose sight of the fact that lower forms of life have produced toxins or toxalbumins, or that, to begin with, this disorder is due to the introduction of some toxic-albuminous

substance, and in either case these bodies are absorbed to cause the constitutional symptoms. Now these substances are eliminated by the intestines, and a great part of the value of a dose of calomel is to be attributed, not to its being an intestinal antiseptic, or being converted into sublimate or what not, but simply that elimination is increased by stimulating the bowels to movement.

If we now come to a discussion of the large intestine as related to elimination, we will have to start with the following proposition. The principal function of the large intestine is that of absorption. Klug and Kovack claim that its absorptive power is greater than that of the stomach. It is also secretory (Heidenhain) but to a small extent. There is very little fluid secreted, the physical condition of the secretion changing rapidly to mucus as we go from the small intestine to the rectum. The conclusion that we would arrive at from these conditions is that elimination is not well developed in the large intestine, and this conclusion seems warranted if we review the etiology of the diseases that occur in the colon and rectum. But there are some conditions the result of an excess in elimination as to quantity or quality, that undoubtedly produce disease in the large intestine. The best known is that one due to intoxication. Mercurial elimination has been established as a cause for trouble in the large intestine that may become serious. It is highly probable that this principle must be taken into consideration in connection with many other pathological conditions of the large intestine, but here again it is difficult to disassociate eliminative processes from others. The lower we go in the intestinal tract the more difficult does this become, so that while in the mouth we could say, more or less positively, what was due to elimination; in the rectum we find so many factors to take into consideration, mechanical, physical, physiological and others, that further study is required before we can decide upon the nature of the process. It has seemed to me that, besides the intoxication, there were severe general conditions that acted upon the large intestine by elimination; the intestinal trouble of influenza, of malaria, of pneumonia, in some instances that of tuberculosis. I have seen several patients who had that form of large intestinal trouble known as enteritis membranosa, in all of whom the condition disappeared as the result of treatment of some tubercular condition.



In conclusion it will be seen how large a field is opened up in etiology, by taking into consideration this process of elimination. Besides the interest attached to it from a purely scientific point of view, there is the more important one of its relation to therapy. In the review of the subject, necessarily incomplete, little stress has been laid upon this aspect of it; but, none the less must we all be impressed by the feeling that, after all, the great duty of the physician is to cure his patients. Anything that can help us in this direction must be of great value, and, therapeutically, elimination has been of great service to many, even before the principle was thoroughly understood. Let us hope, more so now that it is being grasped and made the basis of tentative therapeutic measures, which, in many instances, prove successful.

THE ORTIZ, FOURTH AND SYCAMORE STREETS.

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**The Success of Thyroid Feeding** in myxœdema has prompted investigation into the action of thyroid juices in other diseases. Exophthalmic goitre, or Graves' disease, which in some respects is the antithesis of myxœdema, produces well marked nervous symptoms which offer a strong contrast to the mental dullness and apathy of cretinism. The over-secretion of the thyroid gland suggests itself as the starting point of Graves' disease; however, this theory has not received any decided clinical verification, although several cases have been relieved by the extirpation of the thyroid gland. The direct relation of the thyroid gland to myxœdema and the therapeutic efficacy of its products when administered in this disease has caused the investigation of other so-called ductless glands. The extension of our therapeutic resources in the use of "internal secretions," together with the general introduction of antitoxic serum, mark an important era in medicine.—*Yale Medical Journal*.

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**Dyspnœa after Extubation.**—In some cases of recurring dyspnœa, after extubation, I have found a proper dose of antipyrine of value in checking the attack. Here the dyspnœa is most likely due to irritation of the recurrent nerve, caused by the sudden absence of the intra-laryngeal pressure. The value of antipyrine in these emergencies was first recommended by Siegfried Schweiger (*Yahrbuch f. Kinderheilkunde*).—*Seibert*.

# A CASE OF APPENDICITIS, FOLLOWED BY GENERAL PERITONITIS, IN A CHILD TWO AND A HALF YEARS OLD.

BY L. EMMETT HOLT, M.D.,

Professor of Pediatrics, New York Polyclinic; Attending Physician to the Babies' and to the Nursery and Child's Hospital, New York.

Attacks of appendicitis in very young children are so infrequent, that even when they occur they are likely to be overlooked, as the subjective symptoms upon which we depend so largely for diagnosis in older patients are wanting. The following case is interesting because of the obscurity of the symptoms, and the age of the patient:

A. R., female, two and a half years old, was seen on April 15, 1896, in consultation with Dr. W. E. Bullard. The child had been exceptionally strong and well since early infancy. For a month before the present attack began she had been somewhat constipated, but with assistance the bowels moved every day. On the afternoon of April 12th, she was taken, three hours after a hearty dinner, with vomiting; this was of the contents of the stomach, but continued after the stomach had been emptied, and was repeated at least a dozen times during the following night, accompanied by some fever. The child did not complain of pain, and did not appear to be seriously ill. On the following morning a cathartic was given, and this was followed in the evening by a good-sized normal evacuation. She vomited occasionally through the day.

On April 14th she was very bright, and by the parents was regarded as quite recovered. She went out in her baby-carriage, and wanted to get up and run about. Toward evening, however, she developed fever, complained of indefinite pain, and vomited again once or twice. She had been kept upon a fluid diet since the beginning of the illness. She grew rapidly worse through the evening, and at 11 P. M. Dr. Bullard saw her for the first time. There was considerable prostration, quite a rapid pulse and high fever, apparently about 103° or 104°.

On the following morning, the 15th, she was no better, and was kept in bed all day for the first time. At 10 A.M. the pulse

was 110, temperature 102°. Vomiting was repeated several times during the day; now the vomited matters were of a grass-green color; previously they had been yellow.

Examination at 4 P. M. showed a stout, well-nourished child, who appeared to be quite seriously ill. The tongue was slightly coated; the mind clear. Respirations were rapid, about sixty a minute, and the nostrils dilated actively with each inspiration; she moved freely about the bed, and seemed comfortable in almost any position. Her general symptoms were strongly suggestive of pneumonia, and she had coughed a few times during the early part of the day. Examination of the lungs, however, revealed nothing, except rather rude respiration over both sides posteriorly. On account of the repetition of the vomiting, and the character of the vomited matters, some intestinal obstruction was suspected, and chloroform was administered, and the abdomen examined with great care. No tumor was discovered at any point; there was no induration in the right iliac fossa; and neither by external examination or *per rectum* was anything suggesting intussusception or appendicitis discovered, although the child was carefully examined with reference to both these conditions. There was no retraction of the thighs, and they could be moved freely in all directions. There was a slight tympanites, but the bowels had not moved since early morning. There seemed to be a slight amount of abdominal tenderness, but it was nowhere marked, and could not be localized.

On the following day she grew rapidly worse; the prostration became very marked, and the temperature fluctuated between 104° and 105.5°. Vomiting was repeated, and all vomited matters were grass-green. This, with the steadily increasing tympanites, left no doubt whatever regarding the existence of peritonitis. On the night of the 16th she grew alarmingly worse, and died on the morning of the 17th, five days after the beginning of the attack, and three days from the time when the symptoms appeared serious.

Only a partial autopsy could be obtained, and this was made under some difficulties, as the embalmer had already injected the abdominal cavity. The lungs were normal, except a moderate amount of congestion. There was no pleurisy; there was a general peritonitis, the intestines being coated quite generally with recent lymph. There was an opening in the appendix about one inch from its distal extremity, and just above this



point was a hard concretion about the size of a pea. The margins of the opening in the appendix were in a sloughy condition. There was no abscess, and no localized induration in the right iliac fossa. The liver, spleen and kidneys were normal.

*Remarks.*—The essential features of this case were that a previously healthy child was suddenly taken with vomiting, which was very persistent at first, but continued throughout the attack, the vomited matters being grass-green after the third day. The bowels were moderately constipated. There was no great amount of prostration until the last thirty-six hours of the illness. There was slight fever at the onset, and high fever for the last two and a half days.

At the time of my examination, upon the 15th of April, there was nothing in the face, pulse, or general condition to suggest peritonitis, the only symptoms pointing in this direction being the grass-green vomiting and the very slight amount of tympanites. From the slight cough, rapid respiration, and negative evidence obtained by a careful examination of the abdomen under chloroform, I was inclined to the diagnosis of pneumonia with abdominal symptoms. On the following day, however, peritonitis was very evident. At no time during the progress of the case were the symptoms clear enough to justify operative interference.

15 EAST FIFTY-FOURTH STREET.

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## DISCUSSION.

DR. WM. OSLER.—A few days ago a colored child of three or four in my ward (a convalescent for nearly three months from severe pneumonia after diphtheria), was taken ill on a Tuesday with severe pains in the upper part of the abdomen. The intensity of the pain, and the high fever, made Dr. Thayer suspicious that there was possibly a recurrence of the pneumonia. On Wednesday the fever persisted; she had vomiting, and the pains were localized in the abdomen, particularly on the right side, but there was no positive tumor. On Thursday morning, when I saw her, it was quite evident that the child had peritonitis, and I sent her down to the operating room at once. There was a diffuse peritonitis, a great deal of injection over the membranes, an acutely inflamed appendix, not perforated. There was a sero-purulent exudate, and from it, and from the appendix, cultures of the pneumococcus were obtained.

## CICATRICIAL STENOSIS OF THE LARYNX IN A CHILD.\*

BY AUGUSTUS CAILLÉ, M.D.,

Professor of Pediatrics, New York Post-Graduate Medical School and Hospital; Visiting Physician to the German Hospital, New York.

The larynx here presented was taken from the body of a girl three and one-half years of age, who was tubed in December, 1895, for diphtheritic croup, at the Willard Parker Hospital, and who subsequently contracted measles, and was transferred to North Brother Island, still wearing the tube. During and after her illness (so it was stated), the child required constant watching, as she was liable to cough up the tube at any time, and was unable to breathe as soon as the tube was out.

I saw her on March 9, 1896, and suspecting cicatricial stenosis of the larynx, I prepared myself to perform a rapid tracheotomy, and I then took out the tube. Breathing immediately became very labored, and in less time than it takes to relate it the little patient was deeply cyanosed, and in a state of complete asphyxia. As the old tube was very much encrusted and roughened over its entire surface, I introduced another tube of the same size. The obstruction which I encountered at the entrance of the larynx was overcome without much force, and in about one minute after placing the tube into the larynx, the child had its normal pink and white color, and a contented smile. I diagnosed a cicatricial stenosis at the entrance of the larynx, and advised tracheotomy with subsequent dilation, or laryngotomy. The operation was to be done on the following day, at the Babies' Wards, Post-Graduate Hospital. In order to run no risks as regards coughing up of the tube, the child was transferred to the ward at once, and everything made ready for tracheotomy at a moment's notice. At 10 P.M. the child awoke from its sleep, and coughed up the tube. The house surgeon was in the ward at the time, and at once placed the child upon the operating table, and with a few strokes of the knife opened the trachea, but the child was dead.

By examining the specimen, you will recognize at once the cicatricial stenosis at the entrance of the larynx, probably the result of a pressure necrosis or direct injury in tubing.

753 MADISON AVENUE.

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\* Read before the American Pediatric Society, Montreal, May 27, 1896.



## DISCUSSION.

DR. W. P. NORTHRUP.—This child was for a long time under my care at the Willard Parker Hospital. It was then suffering from adductor paralysis, the diagnosis being confirmed by Dr. O'Dwyer. As a patient, the child caused much anxiety in the hospital. It would frequently cough the tube out in the night, and the whole house would be aroused to prevent the death of the child. Dr. O'Dwyer believed that if tracheotomy were performed to get rid of the paralysis, that intubation would have to be performed to get rid of the tracheotomy tube. It is possible to make a diagnosis of adductor paralysis without the laryngoscope. The diagnosis in this case was made upon physical evidence and the behavior of the tube.

DR. A. CAILLÉ.—I wish to go on record as stating that it is impossible to make a diagnosis of adductor paralysis without the laryngoscope, and I believe that the specimen shown by me is one of cicatricial stenosis. It may have been adductor paralysis at one time, but by examining the larynx here presented, any one can see that there is a cicatricial stenosis. If I had tracheotomized the child immediately, it would be alive to-day, but I did not get the consent of the parents at the time. Tracheotomy should have been done at a much earlier period in this case.

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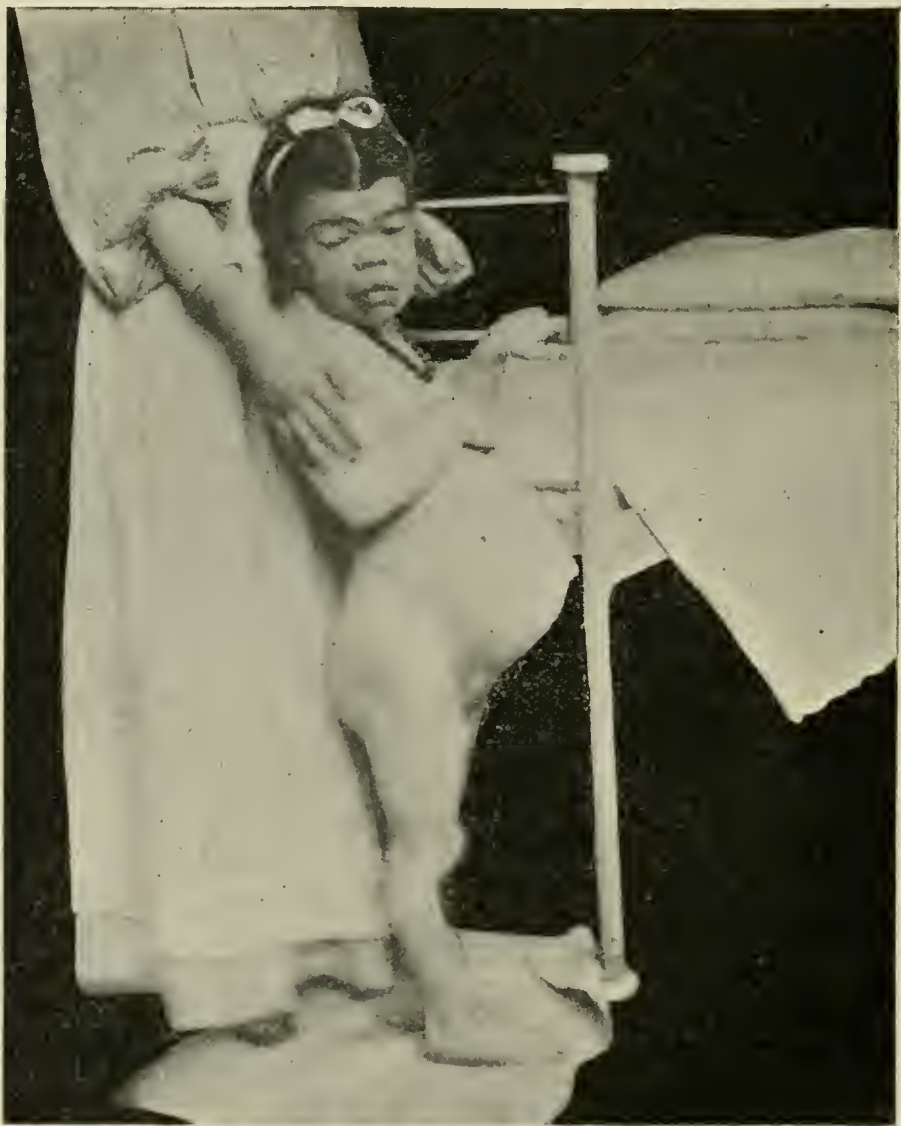
**Fibromyoma in Child Aged Nine.**—Sasaki (*Sei-i-Kway*). states that Professor Saneyoshi, of Tokyo, operated last November on a little girl, aged nine, whose abdomen was extremely distended by tumors, which had been growing for several years. Three were very prominent, with depressions of the integument between them. They felt smooth and elastic. On opening the abdomen a large solid tumor was exposed, then several others came into view. They were loosely fixed to the adjacent parts by a thin covering membrane, so that they were readily removed by manipulation; the largest lay in the right iliac fossa, some were detected close to the liver and in the left hypochondriac region. All were subperitoneal. The patient suffered severely from shock, and died half an hour after the operation. Twenty-one tumors were removed. The biggest measured fourteen inches by eight the smallest was not quite an inch long in diameter. They were composed of dense fibrous tissue containing some non-striated muscular fibres.—*British Medical Journal*.

## A PREGNANT CRETIN.\*

BY CHARLES W. TOWNSEND, M.D.,

Physician to Out-Patients, Massachusetts General, Children's, and Boston  
Lying-in Hospitals, Boston.

The accompanying photograph is of a cretin, seven months pregnant. She was born in Eastern Massachusetts, of American



CRETIN, THIRTY-EIGHT YEARS OF AGE, PREGNANT.

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\*Photograph shown at the meeting of the American Pediatric Society in Montreal, May 27, 1896.

parentage, and is now thirty-eight years old. She is forty-three and one half inches in height, and weighs with clothes, and in her pregnant condition, sixty-five and one-half pounds. Her catamenia began at the age of twenty-two years. She is an idiot and her small size and thickened features present the characteristic appearance of cretinism.

She had, of course, a small pelvis. Cæsarian section was performed at full term, July 26. 1896, at the Boston Lying-in Hospital by Dr. Edward Reynolds. The mother made a good recovery. The infant was fairly developed showing no signs of cretinism. It was a male weighing three pounds and ten ounces. It was very feeble and lived only four hours.

76 MARLBOROUGH STREET.

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**The Administration of Quinine to Children.**—Binz (*Deut. Med. Woch.*, 1896) mentions certain preparations of quinine which he has found convenient in the treatment of children, who usually exhibit a great repugnance to the taste of the drug. They were tested during the epidemic of whooping cough: (1) Quinine pearls, gelatine capsules containing gr. jss, were taken readily by children over three years, while younger children could be taught to swallow them. (2) Quinine chocolate; each piece contained gr. jss, and the bitter taste was so well covered that infants of nine months would take them; they did not produce gastric disturbance. (3) Suppositories made of cocoa butter, and containing various doses up to gr. vjiss. (4) A hypodermic solution of one part of hydrochlorate of quinine in four parts of water. With proper precautions the injections were not followed by abscesses, and were found valuable in cases of whooping cough in which quinine could not be tolerated by the mouth. (5) Quinine may be given in enema; the quantity of solution used should not exceed  $\bar{3}$ j. (6) Tannate of quinine, which in powder is almost tasteless, was a fairly satisfactory substitute for other preparations, but the dose given must be double that of the sulphate, and the effect was not produced so rapidly or certainly.—*British Medical Journal*.

# A CLINICAL REPORT ON THE CHEMICAL EXAMINATION OF TWO HUNDRED CASES OF HUMAN BREAST MILK.

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AND

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The observations on the cases reported in this article were compiled by Dr. Vanderpoel Adriance while resident physician at the Nursery and Child's Hospital; simultaneously Mr. John S. Adriance made the chemical determinations of the milks in the laboratory of the same institution. The milks were pumped between 8 and 9 A.M., placed in a clean bottle, and taken to the laboratory before any chemical decomposition could set in; and in almost every case the analysis was completed before night-fall. It would be preferable in each case to report the analysis of the entire pumpings of one breast, but as this seemed impracticable, our analyses represent the middle milk, the mother being instructed to nurse her infant for two minutes before pumping the sample.

The Nursery and Child's Hospital offers especial facilities for the study of this subject. Many of the children are born in the institution, and those that are not have an accurate history taken at the time of their admission. Notes and weights are recorded daily during the first two weeks of life, and subsequently once a week, so that a complete record is kept for reference. The fact that a large number of the children are perfectly well is of great value, as it admits of the establishment of a normal standard for the purpose of comparison.

The cases reported were under the daily observation of the resident physician. Careful notes were taken of the mother's history, as well as the child's. The cases have been divided into



normal and abnormal. The normal ones are selected, only a clean record on both mother's and infant's sides justifying such classification. A clean record implies, on the part of the mother, a good general condition, and on the part of the child, no immediate sickness or gastro-intestinal symptoms, and a weight record which corresponds approximately with the weight chart constructed by Holt. During the later months of lactation, however, it is normal for a child to gain weight less slowly, and if nursing is continued too long, an actual loss may occur. In order to ascertain the normal milk of this period, all the cases were included, unless some wide variation was observed; a loss of weight pure and simple at this period being insufficient to define its abnormality. In this period are also included infants not entirely breast-fed.

To appreciate the abnormal, we must start with some knowledge of the normal. This is as true of the chemical analysis of human milk as of other subjects in medicine, and in judging of the results of milk analysis, some physiological standard must be set with which we shall be enabled to compare our results. Human milk has in its composition fat, carbohydrate, proteids, salts, and water. The first four represent the solid constituents, and the water represents the vehicle by which they are offered in liquid form. These constituents exist in a more or less definite proportion to each other, and yet we cannot say that all milks are alike, for they vary greatly, and although we never have more than the above-mentioned constituents, these are markedly variable. Still some standard is necessary, and we may roughly state that normal human breast milk can be represented by figures included between certain extremes. The fat varies from 3 to 4 per cent., carbohydrate from 6 to 7 per cent., proteids from 1 to 2 per cent., and the salts can be represented by .20 per cent.\* The total solids amount to 12 per cent., while the water, the complement of the total solids, is 88 per cent. In tabular form the percentages would appear thus:

Fat.	Carbohydrate.	Proteids.	Salts.	Total Solids.	Water.
3-4	6-7	1-2	.20.	12.	. 88.

In our list we have 120 normal cases,\* extending from the second day of lactation into the fifteenth month. The analyses are recorded below in chronological order. We regret that no

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\*The average age of these mothers was twenty-five years; fifty-five were multiparæ, sixty-five primiparæ.

## NORMAL CASES.

MOTHER.			AGE OF INFANT.	SPEC. GRAV.	FAT.	CARBOHYDRATES.	PROTEID.	ASH.	TOTAL SOLIDS.	WATER.
AGE.	GRAVIDA.	*SUPPLY OF MILK.								
19	2	S.	2 Days.		3.77	5.39	3.31	.27	12.78	87.21
29	2	S.	3 d.	1.034	1.97	6.58	2.04	.24	10.84	89.15
20	1	S.	3 d.	1.030	4.52	5.86	2.37	.26	13.03	86.96
27	4	S.	4 d.		2.24	6.44	1.91	.27	10.88	89.11
20	1	G.	4 d.	1.031	2.80	6.36	2.25	.26	11.69	88.30
21	2	A.	5 d.		6.54	5.36	3.37	.28	15.54	84.45
37	6	G.	5 d.	1.033	3.00	6.56	.66	.25	10.48	89.53
18	1	G.	5 d.	1.030	2.53	6.37	1.85	.28	11.02	88.95
29	2	G.	6 d.	1.035	2.64	6.74	1.81	.28	11.49	88.50
20	1	G.	6 d.	1.037	2.80	6.83	2.13	.25	12.02	87.97
26	6	S.	6 d.		4.35	5.93	2.00	.20	11.48	88.52
29	2	G.	6 d.		3.81	6.75	1.84	.26	13.70	86.28
23	2	G.	6 d.		4.30	5.38	2.79	.23	12.71	87.28
24	1	A.	7 d.	1.030	3.74	6.09	2.15	.34	12.35	87.64
19	1	A.	7 d.		2.93	6.55	2.70	.20	12.38	87.61
37	6	G.	7 d.	1.033	2.27	6.87	1.41	.20	10.76	89.23
23	2	G.	7 d.	1.026	4.06	5.93	2.10	.26	12.34	87.65
29	2	F.	8 d.		3.14	6.50	1.90	.18	11.74	88.24
24	2	G.	8 d.		2.05	6.39	2.10	.24	10.81	89.18
35	7	S.	9 d.		4.76	6.00	1.50	.19	12.46	87.53
19	2	G.	10 d.		2.64	6.62	1.70	.23	11.19	88.80
37	6	G.	10 d.	1.034	2.84	6.38	1.84	.23	11.30	88.68
25	1	A.	11 d.		4.74	7.14	2.10		13.99	86.00
30	1	G.	11 d.	1.030	2.29	6.03	2.12	.24	10.72	89.27
34	1	A.	12 d.		3.17	6.94	2.66	.10	12.87	87.13
23	2	A.	12 d.	1.030	3.32	6.76	1.62	.21	11.93	88.06
23	2	A.	12 d.	1.030	2.52	6.62	1.80	.22	11.18	88.81
20	1	A.	13 d.	1.030	5.58	6.20	2.13	.19	14.09	85.90
20	2	A.	14 d.	1.030	5.01	6.67	1.30	.20	13.19	86.80
30	1	G.	15 d.	1.032	3.73	6.77	1.38	.22	12.15	87.84
30	1	G.	15 d.	1.032	4.48	6.54	2.47	.26	13.74	86.25
18	1	A.	15 d.	1.030	5.26	6.39	1.79	.22	13.69	86.30
20	1	G.	16 d.	1.030	4.29	6.52	1.93	.20	12.95	87.04
29	2	G.	16 d.	1.030	3.15	6.54	.69	.17	10.57	89.41
21	2	A.	16 d.		5.84	6.94	1.73	.21	14.71	85.28
19	1	A.	16 d.	1.032	5.31	6.11	1.30	.23	12.97	87.02
19	2	A.	19 d.	1.032	4.79	6.89	1.15	.21	13.06	86.93
19	2	A.	24 d.	1.027	5.61	6.77	1.19	.20	13.79	86.20
19	2	G.	24 d.	1.029	3.77	6.89	2.69	.20	13.56	86.43
20	2	A.	26 d.	1.023	5.21	5.35	1.81	.28	12.66	87.32
29	2	G.	26 d.	1.032	2.94	7.12	1.35	.20	11.63	88.34
20	1	G.	26 d.	1.030	5.26	7.05	1.66	.22	14.19	85.80
27	2	G.	29 d.	1.033	1.85	6.90	1.34	.25	10.36	89.63
18	1	G.	31 d.	1.031	2.46	6.98	1.25	.21	10.95	89.04
39	2	F.	31 d.		4.52	6.83	2.02	.21	13.60	86.39
18	1	A.	31 d.		1.77	6.49	1.33	.16	9.75	90.23
20	2	A.	1 m. 4 d.	1.031	2.56	6.83	1.57	.17	11.14	88.85

\* S, scant. G, good. A, abundant. F, fair.



## NORMAL CASES (Continued).

MOTHER.			AGE OF INFANT.	SPEC. GRAV.	FAT.	CARBOHYDRATES.	PROTEID.	ASH.	TOTAL SOLIDS.	WATER.
AGE.	GRAVIDA.	SUPPLY OF MILK.								
29	2	G.	1 m. 7 d.		1.94	6.91	.86	.14	9.86	90.13
26	1	F.	1 m. 10 d.	1.033	2.27	7.25	1.28	.19	11.01	88.98
32	4	A.	1 m. 14 d.	1.035	2.48	6.57	2.01	.18	11.27	88.72
23	2	G.	1 m. 17 d.	1.030	4.08	6.91	1.44	.19	12.61	87.38
31	1	F.	1 m. 17 d.		4.22	5.64	1.81	.15	11.83	88.16
26	2	G.	1 m. 19 d.		2.86	6.98	1.21	.15	11.21	88.78
19	1	A.	1 m. 21 d.		3.28	6.59	1.45	.16	11.53	88.46
20	1	A.	1 m. 23 d.		4.10	6.59	2.56	.17	13.43	86.56
32	1	A.	1 m. 28 d.		4.53	6.69	1.35	.19	12.75	87.24
29	2	G.	2 m.	1.029	3.15	6.99	1.00	.19	11.36	88.63
23	2	G.	2 m.	1.035	3.44	6.69	1.43	.16	12.03	87.96
25	2	A.	2 m. 5 d.		3.24	6.54	1.22	.17	11.18	88.81
31	1	F.	2 m. 12 d.		4.47	5.50	1.78	.20	12.03	87.96
20	1	F.	2 m. 12 d.		4.00	6.08	2.08	.21	12.37	87.62
23	1	G.	2 m. 17 d.	1.027	5.26	6.92	1.07	.19	13.47	86.52
25	1	A.	2 m. 21 d.		2.66	6.62	1.57	.15	11.05	88.94
24	2	A.	2 m. 22 d.		3.41	7.51	1.69	.18	12.81	87.17
34	1	A.	2 m. 27 d.		3.15	6.06	1.83	.17	11.22	88.77
35	4	A.	2 m. 30 d.	1.026	3.69	6.81	1.36	.18	12.06	87.93
19	1	F.	3 m. 3 d.		5.11	6.64	1.55	.18	13.50	86.49
31	1	F.	3 m. 4 d.		6.78	5.94	1.41	.19	14.31	85.67
29	1	F.	3 m. 5 d.		3.83	6.85	2.06	.22	12.97	87.02
22	1	G.	4 m.	1.030	3.86	7.02	1.63	.20	12.71	87.28
		A.	4 m.	1.029	3.15	7.03	.60	.14	10.96	99.02
30	3	A.	4 m. 10 d.		4.94	6.68	.42	.15	12.21	87.78
24	1	G.	4 m. 15 d.		4.10	5.99	1.94	.18	12.22	87.77
18	1	A.	4 m. 23 d.	1.030	1.35	6.48	1.18	.17	9.19	90.80
21	1	G.	4 m. 23 d.		5.83	6.18	1.89	.17	14.09	85.90
23	1	A.	4 m. 23 d.	1.027	3.38	6.85	.37	.17	10.77	89.22
24	2	A.	4 m. 23 d.		4.87	6.66	1.47	.14	13.17	86.82
24	1	G.	5 m. 1 d.		2.01	6.99	2.66	.13	11.73	88.26
22	1	G.	5 m. 12 d.		2.30	6.19	1.41	.16	10.07	89.92
23	1	A.	5 m. 14 d.		3.88	7.95	1.57	.18	13.58	86.42
28	5	G.	5 m. 14 d.		1.80	7.24	1.27	.19	10.49	89.49
28	2	A.	5 m. 21 d.		1.31	7.71	1.01	.09	10.12	89.88
27	2	G.	5 m. 23 d.	1.029	2.45	7.04	1.02	.20	10.73	89.26
27	2	G.	5 m. 23 d.	1.028	3.96	7.04	1.17	.20	12.38	87.67
24	1	A.	6 m.		5.43	6.87	1.11	.16	13.62	86.37
24	1	A.	6 m. 10 d.	1.025	7.61	6.69	.81	.17	15.31	84.64
26	2	G.	6 m. 23 d.		4.41	7.03	1.68	.20	13.34	86.65
23	1	A.	7 m.		5.79	6.14	1.63	.20	13.77	86.22
21	1	F.	7 m. 17 d.	1.034	2.38	6.91	1.05	.15	10.50	89.48
21	1	A.	7 m. 19 d.	1.031	3.66	6.88	1.40	.18	12.15	87.84
28	2	A.	7 m. 25 d.		4.93	6.55	.98	.13	12.61	87.38
21	1	G.	7 m. 26 d.		4.02	6.79	.71	.18	11.69	88.30
20	1	G.	7 m. 29 d.	1.033	1.59	7.05	.69	.21	9.57	90.42
26	1	G.	8 m.	1.032	6.08	7.20	.89	.16	14.34	85.65
28	2	G.	8 m. 10 d.		3.11	7.33	.98	.15	11.60	88.39

NORMAL CASES (*Continued*).

AGE.	MOTHER.		AGE OF INFANT.	SPEC. GRAV.	FAT.	CARBOHYDRATES.	PROTEID.	ASH.	TOTAL SOLIDS.	WATER.
	GRAVIDA.	SUPPLY OF MILK.								
37	2	G.	8 m. 24 d.	1.022	4.77	6.66	.54	.15	12.14	87.85
28	5	G.	8 m. 27 d.	1.034	4.66	7.09	.57	.16	12.52	87.47
30	3	F.	8 m. 28 d.	1.030	3.54	6.70	1.30	.10	11.63	88.36
28	2	A.	9 m. 7 d.	1.030	1.99	7.04	.69	.16	9.87	90.12
28	2	G.	9 m. 16 d.		1.91	7.18	1.05	.14	10.32	89.67
29	3	G.	9 m. 15 d.		4.90	6.99	.83	.16	12.89	87.10
24	1	G.	10 m. 17 d.		4.92	6.64	1.07	.16	12.82	87.17
28	2	G.	10 m. 18 d.		4.78	6.69	.61	.17	12.26	87.73
20	1	F.	10 m. 22 d.	1.033	1.95	7.59	.23	.21	9.98	90.01
25	1	F.	11 m. 1 d.		6.45	7.11	.93	.13	14.65	85.34
24	1	G.	11 m. 9 d.		3.09	6.21	1.25	.23	10.80	89.19
28	2	A.	11 m. 10 d.		4.80	7.20	.34	.14	12.49	87.50
23	1	G.	11 m. 18 d.		6.17	6.34	.48	.14	13.14	86.85
28	1	G.	11 m. 19 d.		3.43	6.99	2.28	.14	12.86	87.13
26	1	G.	11 m. 20 d.		3.57	6.79	1.17	.15	11.69	88.30
20	1	F.	11 m. 21 d.	1.028	3.00	6.91	.80	.16	10.92	89.07
28	1	G.	11 m. 22 d.		3.00	5.64	2.31	.14	11.11	88.88
19	1	F.	12 m. 13 d.		3.23	6.92	1.25	.13	11.55	88.43
30	1	F.	12 m. 14 d.		4.44	7.19	.39	.14	12.15	87.84
28	1	G.	12 m. 17 d.		6.59	5.81	1.52	.15	14.11	85.88
24	1	G.	12 m. 18 d.		3.49	5.96	1.86	.19	11.52	88.47
20	1	F.	12 m. 28 d.	1.030	5.34	7.06	.09	.21	12.75	87.24
34	2	G.	13 m. 8 d.		2.53	7.33	.65	.13	10.65	89.34
30	1	G.	14 m. 5 d.		4.46	7.15	.76	.16	12.53	87.46
20	1	G.	14 m. 15 d.	1.030	4.11	7.42	.48	.15	12.20	87.79

determination of the milk of the first day after delivery could be made; notwithstanding many attempts, sufficient milk for that purpose could not be obtained at that time, nor could a specimen be obtained later than the fifteenth month.

Our thanks are due to Dr. Samuel Lambert, Dr. J. J. Hull, Dr. A. M. Thomas, and Dr. L. E. Holt, of the Medical Board, for their kind co-operation and permission in allowing the publication of our results, and to Drs. Thomas and Holt, who permitted us to report the milks from their private cases, which were analyzed by us.

The reaction was uniformly alkaline. The number of cases reported hardly warrants a determination of a standard to which all human milk should conform. The averages can only be considered as approximations, but such approximations will help us in studying the cases in hand, and, above all, to appreciate the

subsequent consideration of abnormal cases. The number of cases is unevenly distributed in the various periods. When each group of cases is viewed in connection with the others, an average curve for each constituent can be determined, representing its amount at any time during lactation.

TABLE SHOWING AVERAGES OF NORMAL CASES AT DIFFERENT PERIODS OF LACTATION.

NO. OF CASES.	PERIOD OF LACTATION.	SPEC. GRAV.	FAT.	CARBO-HYDR.	PROTEIDS.	SALTS.	TOTAL SOLIDS.	WATER.
1	2 Days.		3.77	5.39	3.31	.27	12.98	87.21
2	3 d.	1.032	3.24	6.22	2.20	.25	11.98	88.05
2	4 d.	1.031	2.52	6.40	2.08	.26	11.28	88.70
3	5 d.	1.031	4.02	6.09	1.96	.27	12.35	87.64
5	6 d.	1.036	5.58	6.33	2.11	.24	12.48	87.77
4	7 d.	1.029	3.25	6.36	2.09	.25	11.96	88.03
2	8 d.		2.59	6.44	2.00	.21	11.27	88.71
1	9 d.		4.76	6.00	1.50	.19	12.46	87.53
2	10 d.	1.034	2.74	6.50	1.77	.23	11.24	88.74
2	11 d.	1.030	3.51	6.58	2.11	.24	12.35	87.63
3	12 d.	1.030	3.00	6.77	2.03	.18	11.99	88.00
1	13 d.	1.030	5.58	6.20	2.13	.19	14.09	85.90
1	14 d.	1.030	5.01	6.67	1.30	.20	13.19	86.80
8	3 wks.	1.031	4.61	6.59	1.55	.21	12.98	87.01
9	4 wks.	1.029	3.71	6.71	1.63	.21	12.30	87.71
10	2 m.	1.032	3.22	6.70	1.54	.17	11.65	88.33
10	3 m.	1.029	3.65	6.60	1.49	.19	11.96	88.02
3	4 m.		5.24	6.48	1.67	.20	13.59	86.36
8	5 m.	1.029	3.93	6.61	1.31	.16	11.91	88.07
7	6 m.	1.028	2.53	7.17	1.43	.16	11.30	88.70
3	7 m.	1.025	5.81	6.86	1.20	.18	14.09	85.90
6	8 m.	1.033	3.73	6.72	1.08	.17	11.71	88.27
5	9 m.	1.029	4.43	7.00	.86	.14	12.45	87.54
3	10 m.	1.030	2.93	7.07	.86	.15	11.03	88.96
3	11 m.	1.033	3.88	6.97	.64	.18	11.69	88.20
8	12 m.	1.028	4.19	6.65	1.18	.14	12.21	87.77
5	13 m.	1.030	4.62	6.59	1.02	.16	12.42	87.57
1	14 m.		2.53	7.33	.65	.13	10.65	89.34
1	15 m.	1.030	4.28	7.28	.64	.15	12.36	87.62

We have grouped and averaged these figures according to the period of lactation. During the first two weeks the changes are so rapid and so marked that the average was taken for every day, but only once a week during the third and fourth weeks, and subsequently but once a month.

#### FAT.

The easiest way to appreciate the changes in this constituent is to study its up and down course in the accompanying chart.

This demonstrates the fact that the amount of fat at successive periods is widely variable. At the same time there is no definite reason to account for this peculiarity, which is not shown by the other ingredients of human milk—the sugar increasing, and the proteids and ash decreasing steadily during the progress of lactation. A study of the accompanying chart will show the very marked variability of this ingredient.

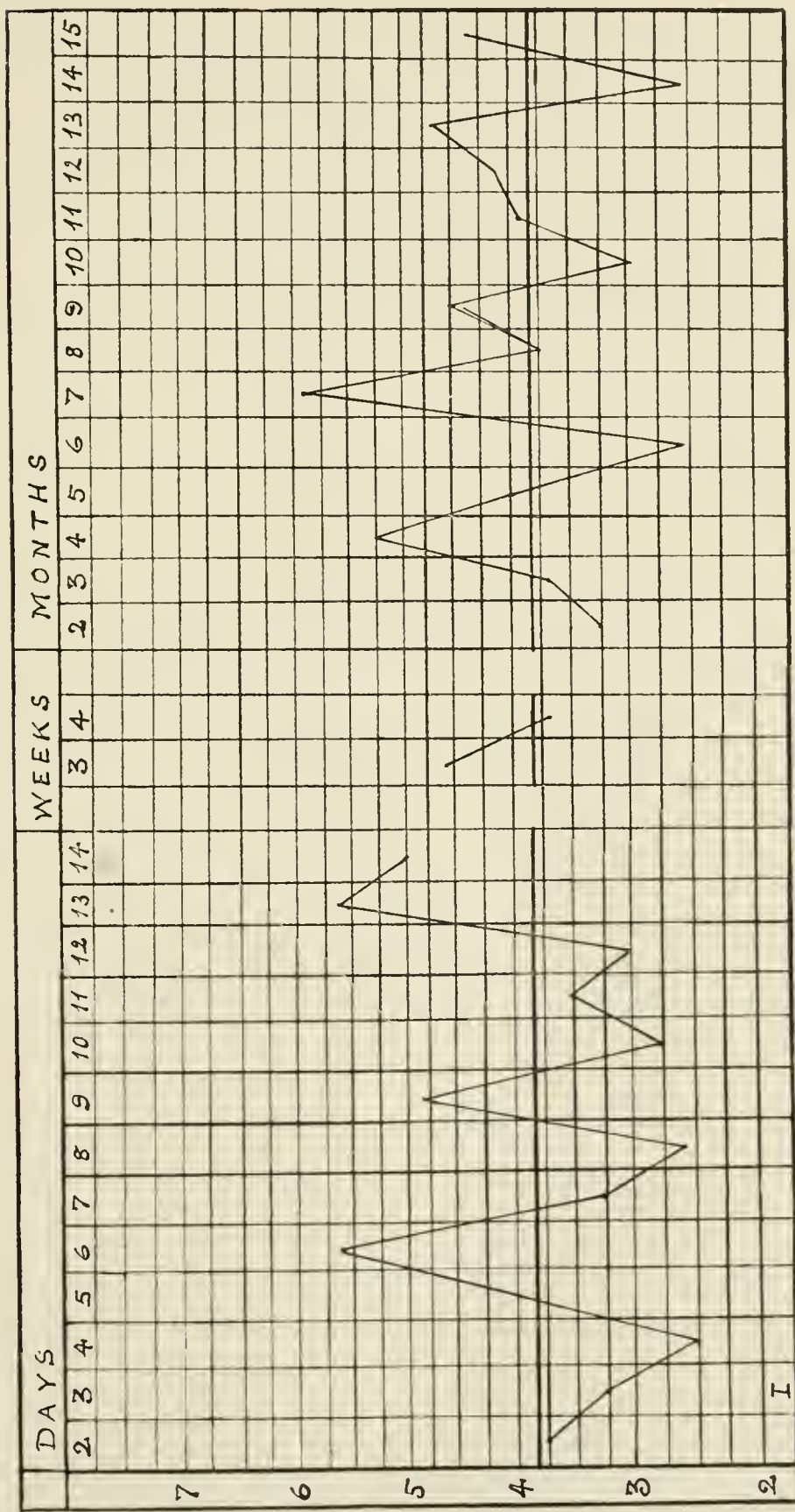
This chart does not represent the analyses of one woman's milk at successive periods of lactation, and should not lead to the inference that any one woman's milk will vary to such a surprising degree. It does show, however, that in a series of 120 cases the percentage of fat is far from being a constant figure.

The amount of fat, then, cannot be represented by a regular curve, as we shall find later is the case with the carbohydrate and proteids, yet some average figure must be adduced to represent the fat, and as this cannot be done by the days, weeks, or months of lactation, the figures must be obtained at different intervals, evenly distributed throughout the entire period. This has been done by taking the average of our list of 120 normal milks, which is 3.83 per cent. This figure should be remembered as the average normal amount of fat, and can be accepted for any time from the colostrum period to the end of lactation. From this figure, however, wide variations are to be expected. Among our normal cases are milks containing as high as 7.61 per cent., and as low as 1.31 per cent. of fat. There is a rough relationship between the amount of fat and proteid, the proportion being 3 to 1. This ratio must not be considered as a hard and fixed one, which will determine whether a milk is to be classed as normal or abnormal, for although it expresses an average, it does not pertain to all cases. If at any time the proteids are found in excess of the fat, it often means that the proteids are above their normal amount. This is more apt to occur during the colostrum period than at any other.

#### CARBOHYDRATE.

The carbohydrate, or milk sugar, is a singularly constant constituent, and represents more of the total solids than all the other ingredients together. It steadily increases from the beginning to the end of lactation, but this increase is so slight, in comparison with its large amount, as to be recognized with difficulty except by averaging many cases. We see from Chart II. that it





FAT.

Chart 1. Showing the averages of 120 normal cases at different periods of days, weeks and months.  
The heavy, straight line represents the computed normal per cent. of fat—3.83 per cent.

does not show marked variations, but pursues a gradual upward course. The lowest per cent. of carbohydrate in any of our normal cases is 5.35 per cent., and the highest 7.95 per cent.

When these figures are turned into an average curve, it rises rapidly during the first two weeks, and less rapidly thereafter, its entire increase from the second day to the fifteenth month reaching from 5.80 per cent. to 6.96 per cent.

Very little is known about the disturbances caused by milk sugar, and none of our cases has been classed as abnormal from any derangement of its creation or from the chemical determination of an excess or scantiness of this constituent. We do know, however, that concerned in the formation of fat in the tissues of the infant, it forms a valuable part of the food.

#### PROTEIDS.

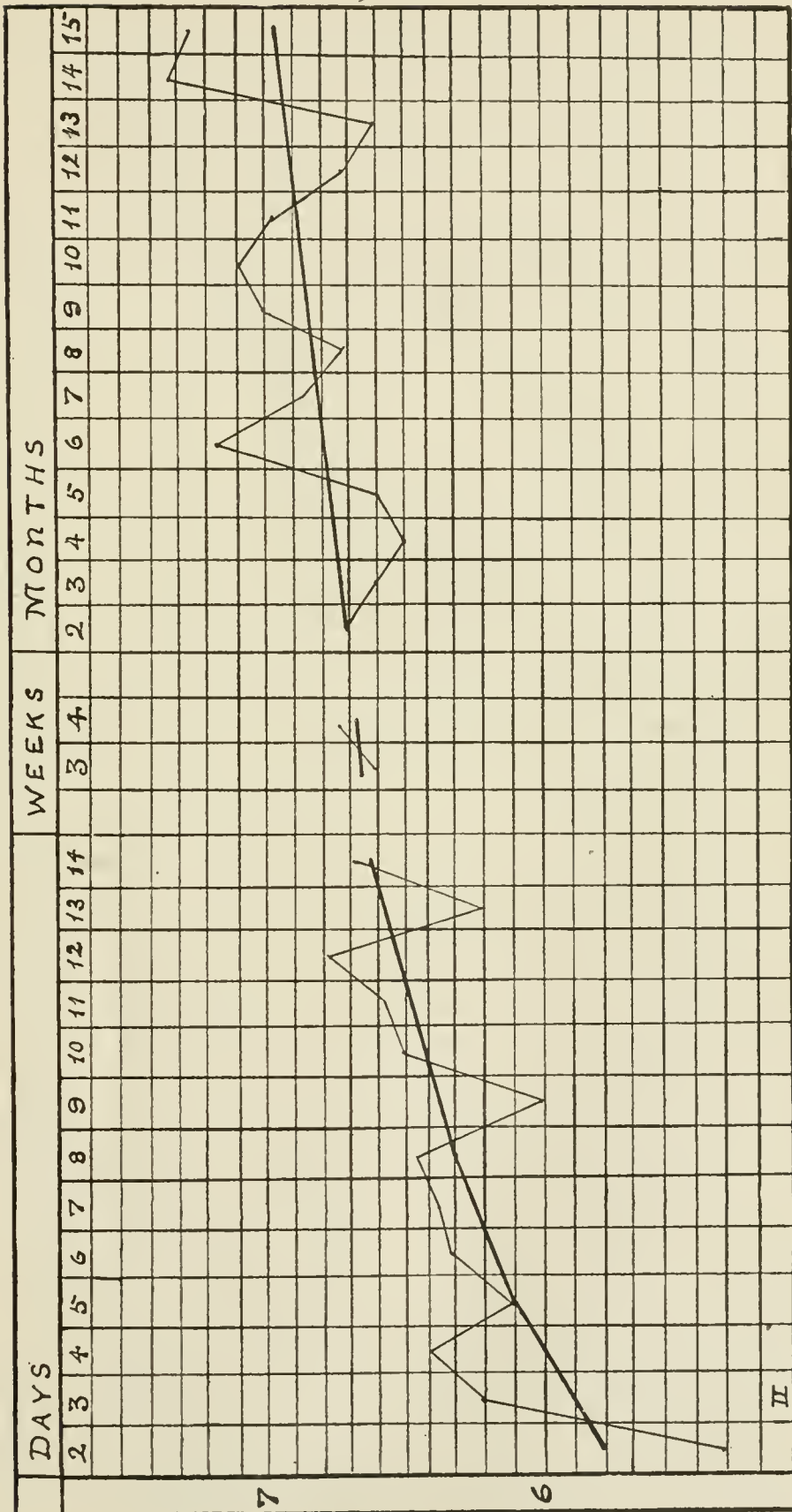
The proteids represent such an important element of the milk, and have such ill effects on the infant if excessive or scanty, that they should be studied carefully. It has been recognized that the amount of the proteids is greater during the first part of lactation than at any other time. This is evident in Chart III., but can be more conveniently studied from the average curve seen in the same chart, which shows the proteids starting on the second day with an excess represented by 2.77 per cent. During the first days there is a rapid fall, becoming less evident as time goes on; and after this the decrease continues, but less rapidly. \* Pfeiffer has recognized this decrease, and although his analyses show the proteids existing in larger amounts than ours, still they demonstrate the same diminution, as shown by the following table:

1st day.	7th day.	2d week.	2d month.	7 months.
8.60 per cent.	3.40 per cent.	2.28 per cent.	1.84 per cent.	1.52 per cent.

† Ludwig also reports a high per cent. for cases between the twentieth and twenty-sixth days. He places the proteids for this period at 2.17 per cent. The rapid decrease of the first days soon becomes less marked, but continues nevertheless until the end of lactation, when it is represented by only a fraction of 1 per cent.

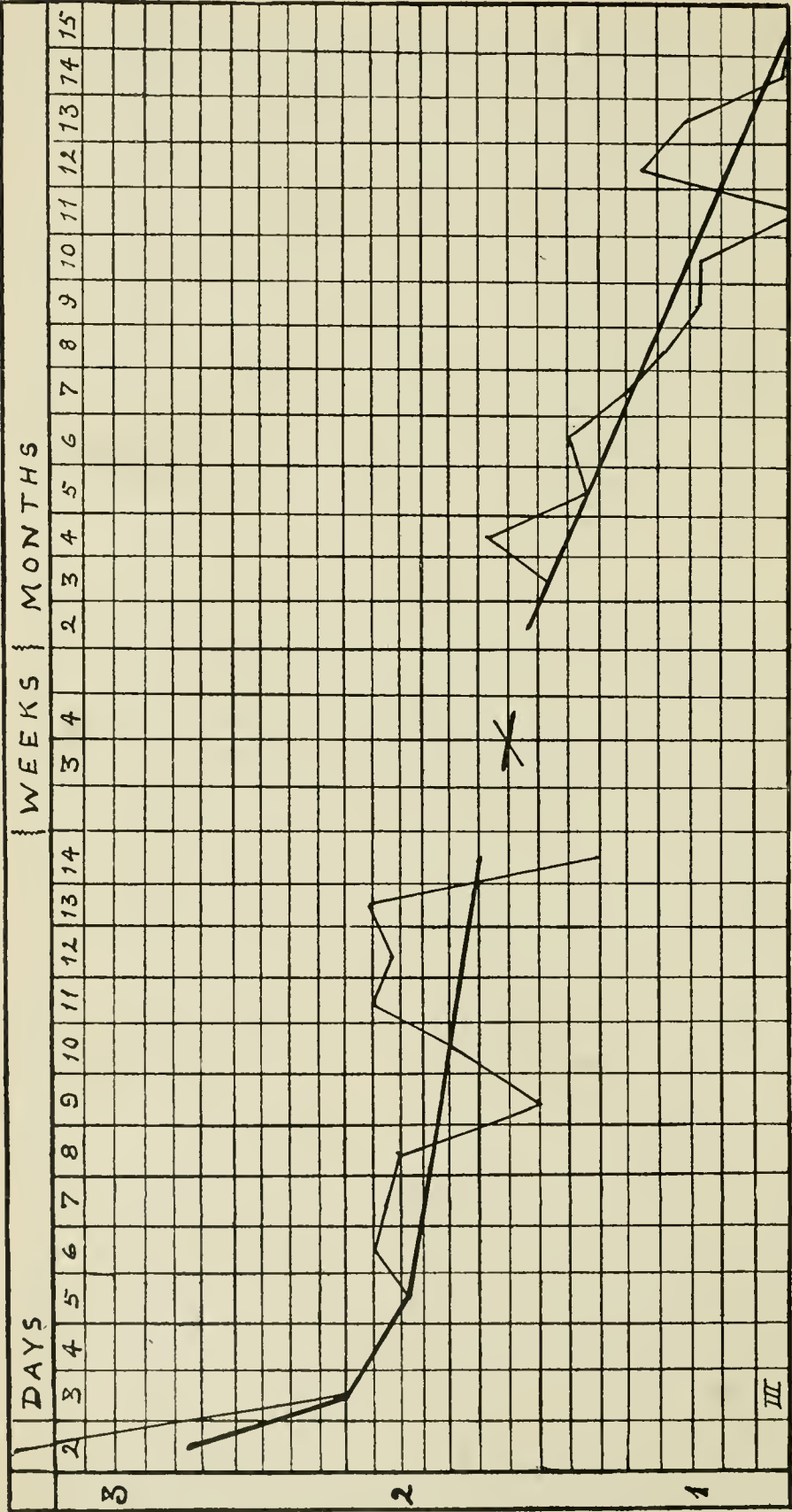
#### SALTS.

The ash, or salts, constitute a very small part of human milk, and its functions are little understood. The following analysis of the salts is published by Harrington and ‡ Kinnicutt:



CARBOHYDRATE.

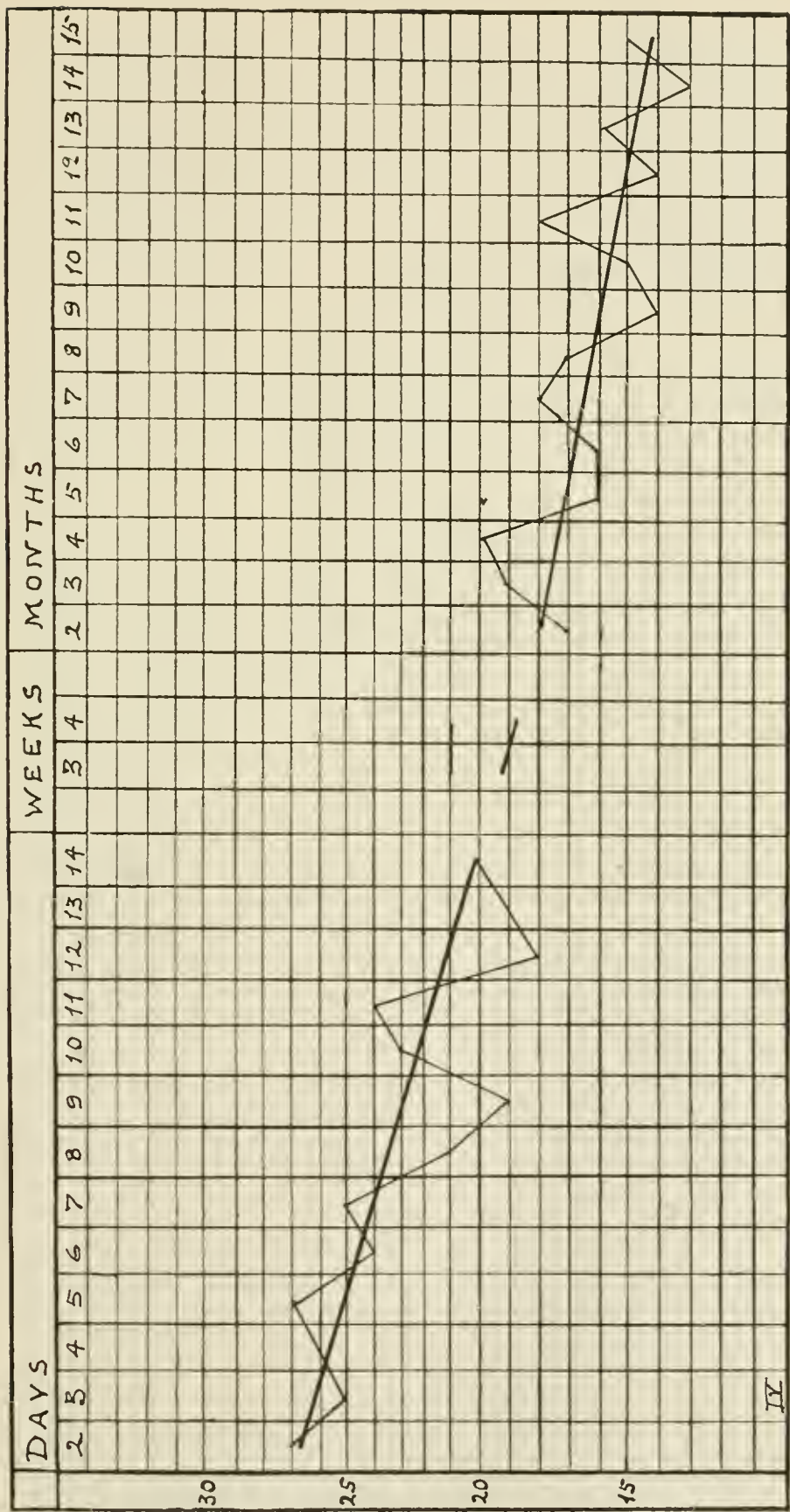
Chart II. Showing the averages of 120 normal cases at different periods of days, weeks, and months.  
The heavy line represents the computed normal curve for the carbohydrate.



PROTEIDS.

Chart III. Showing the averages of 120 normal cases at different periods of days, weeks, and months.  
The heavy line represents the computed normal curve for the proteids.





SALTS.

Chart IV. Showing the averages of 120 normal cases at different periods of days, weeks and months.  
The heavy line represents the computed normal curve for the salts.

Calcium phosphate, . . . . .	23.87
Calcium silicate, . . . . .	1.27
Calcium sulphate, . . . . .	2.25
Calcium carbonate, . . . . .	3.77
Potassium carbonate, . . . . .	23.47
Potassium sulphate, . . . . .	8.33
Potassium chloride, . . . . .	12.05
Sodium chloride, . . . . .	21.77
Iron oxide and aluminum, . . . . .	.37
	<hr/>
	100.00

Like the proteids, the salts diminish slowly but steadily from the beginning. On the second day they average .27 per cent., but this figure falls, till in the fifteenth month it is only .14 per cent. (Chart IV.)

#### TOTAL SOLIDS.

The total solids are composed of all the elements we have considered—namely, the fat, carbohydrate, proteid, and ash; and any variation in these constituents should be shown in the total solids. The average amount of fat, we have shown, is 3.83 per cent., and this has been accepted as our standard throughout, so that it will cause no variation. The ash, represented by only a fraction of 1 per cent., is so small as to be practically thrown out of consideration. We must look to the carbohydrate and proteid, then, for any change in the amount of the total solids. These, however, very nearly compensate each other, as the sugar increases and the proteid decreases steadily during lactation, thus acting as balances to each other. So the total solids remain very constant, when lactation is considered as a whole, but nevertheless show variation from month to month, as the chart demonstrates. The average for the total solids is 12.20 per cent. until the seventh month. After this it suffers a gradual decline until, at the fifteenth month, it is 11.50 per cent. (Chart V.)

#### WATER.

The water is the complement of the total solids, and as the latter decrease, the former increases, so that during the last months there is a slight gain.

#### SPECIFIC GRAVITY.

The average specific gravity is 1.030. The proteids and fat are the chief determining agents of the specific gravity. Any increase in the fat lowers the specific gravity, and any decrease

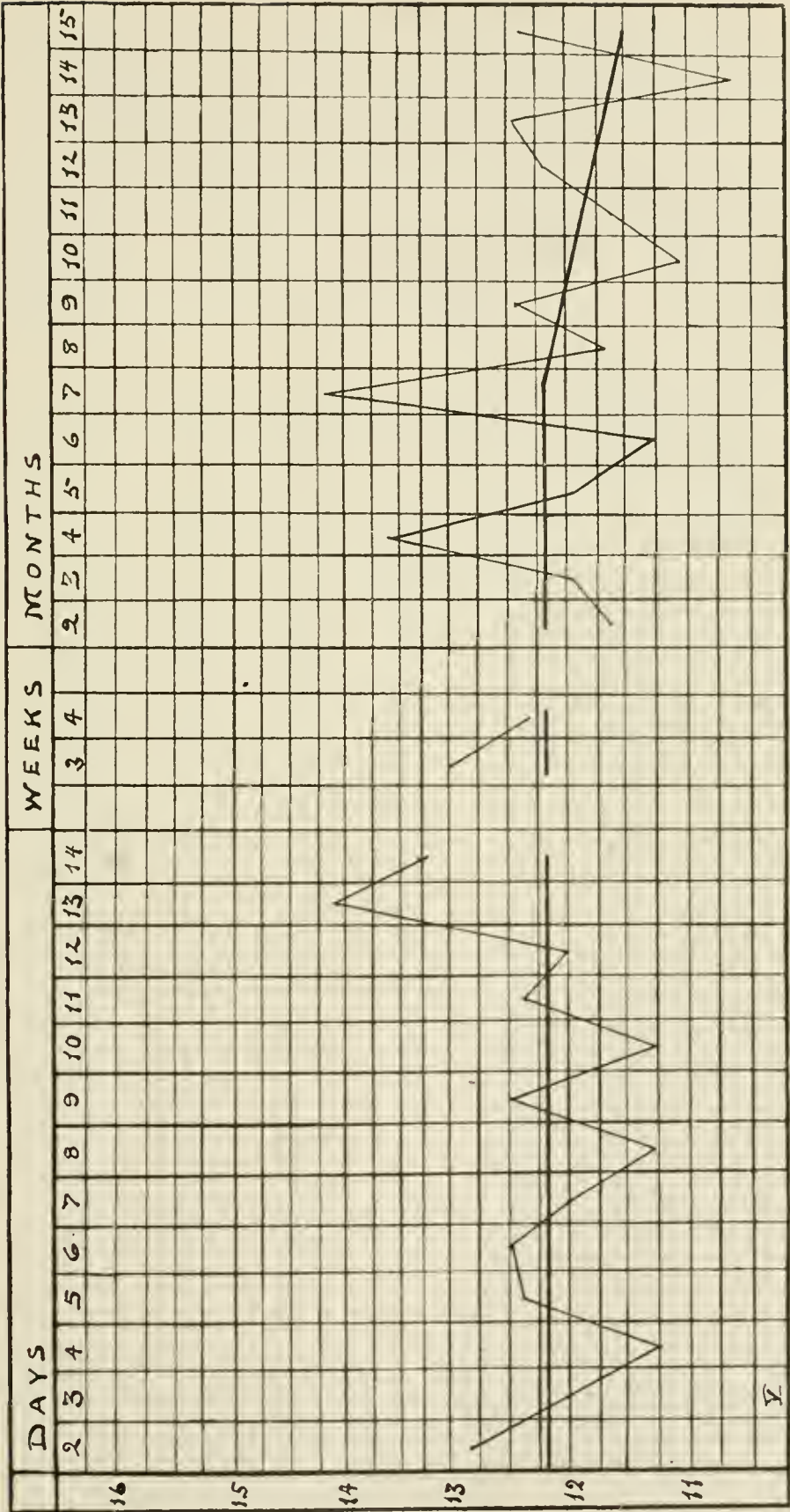


Chart V. Showing the averages of 120 normal cases at different periods of days, weeks and months.  
The heavy line represents the computed normal curve for the total solids.



raises it. The proteids exert exactly the opposite effect—the greater their quantity, the higher the specific gravity, and *vice versa*. We should, therefore, expect the specific gravity to be lowest when the fats are highest and the proteids lowest; and highest when the conditions are reversed. From this it may be inferred that the specific gravity should fall as the proteids and total solids diminish in the later months of lactation. And this we find to be the case, but the change is so slight, and our list of specific gravities so small, that it will not be worth recording till further observations are made.

COMPUTED AVERAGES FOR HUMAN MILK DURING LACTATION,  
TABULATED FROM THE AVERAGE CURVES.

PERIOD.	SPEC. GRAV.	FAT.	CARBO- HYDR.	PROTEIDS.	ASH.	TOTAL SOLIDS.	WATER.
2 Days.	1.030	3.83	5.80	2.77	.27	12.20	87.80
3 d.	1.030	3.83	5.90	2.20	.26	12.20	87.80
4 d.	1.030	3.83	6.00	2.10	.25	12.20	87.80
5 d.	1.030	3.83	6.10	2.00	.25	12.20	87.80
6 d.	1.030	3.83	6.16	1.95	.24	12.20	87.80
7 d.	1.030	3.83	6.22	1.90	.24	12.20	87.80
8 d.	1.030	3.83	6.29	1.87	.23	12.20	87.80
9 d.	1.030	3.83	6.37	1.84	.22	12.20	87.80
10 d.	1.030	3.83	6.42	1.80	.22	12.20	87.80
11 d.	1.030	3.83	6.48	1.78	.21	12.20	87.80
12 d.	1.030	3.83	6.53	1.75	.21	12.20	87.80
13 d.	1.030	3.83	6.59	1.72	.20	12.20	87.80
14 d.	1.030	3.83	6.63	1.70	.20	12.20	87.80
3 wks.	1.030	3.83	6.67	1.62	.19	12.20	87.80
4 wks.	1.030	3.83	6.68	1.58	.19	12.20	87.80
2 m.	1.030	3.83	6.70	1.55	.18	12.20	87.80
3 m.	1.030	3.83	6.72	1.48	.18	12.20	87.80
4 m.	1.030	3.83	6.74	1.40	.17	12.20	87.80
5 m.	1.030	3.83	6.76	1.32	.17	12.20	87.80
6 m.	1.030	3.83	6.78	1.25	.16	12.20	87.80
7 m.	1.030	3.83	6.80	1.18	.16	12.20	87.80
8 m.	1.030	3.83	6.82	1.11	.16	12.12	87.88
9 m.	1.030	3.83	6.84	1.04	.16	12.04	87.96
10 m.	1.030	3.83	6.86	.97	.15	11.95	88.05
11 m.	1.030	3.83	6.88	.90	.15	11.86	88.14
12 m.	1.030	3.83	6.90	.83	.15	11.77	88.23
13 m.	1.030	3.83	6.92	.77	.14	11.68	88.32
14 m.	1.030	3.83	6.94	.70	.14	11.59	88.41
15 m.	1.030	3.83	6.96	.63	.14	11.50	88.50

So far we have considered the general changes taking place in mother's milk during lactation as a whole, but there are two periods which deserve our especial attention; these are commonly known as the colostrum period and the later months of lactation.



## COLOSTRUM PERIOD.

The characteristics of the milk of this period are:

(1) The presence of colostrum corpuscles. Normally these corpuscles persist in the milk from seven to ten days.

(2) Laxative property upon the infant.

(3) Yellow color of the milk, which is marked at first, fades gradually, and disappears about the same time as the colostrum corpuscles.

(4) Chemical characteristics.

It seems to us that the chemical analysis of the colostrum milk is of greater importance, as a characteristic of the milk of this period, than any of the others just mentioned, and that it is insufficient to say that the colostrum corpuscles are the *sine qua non*, upon whose disappearance the milk ceases to belong to the colostrum period. Arbitrary as it is, we have considered the colostrum period as covering the first two weeks.

During the first days, when the breasts are assuming their functional activity, we should expect irregularities in the secretion which would not occur later when the function is established. It is not infrequent to find the fat very high during this period, or, on the other hand, very low. The sugar is lower on the second day than at any other time, but rises steeply, and at the end of two weeks its curve has traveled well upward. The proteids, as already remarked, pursue just the opposite course, being higher on the second day than at any other time, but fall rapidly during the first few days, and less rapidly subsequently. From 2.77 per cent. on the second day, it goes to 1.7 per cent. on the fourteenth day. This excess of proteids during the colostrum period is of great importance, as we shall see in the consideration of abnormal milks.

The ash, like the proteids, is higher at this time than at any other.

Examples to show the changes during the first part of lactation. Mother 20 years of age, primipara.

	3 days.	6 days.	16 days.	26 days.
Fat, . . . .	4.52	2.80	4.29	5.26
Carboh., . . . .	5.86	6.83	6.52	7.05
Proteids, . . . .	2.37	2.13	1.93	1.66
Salts, . . . .	.26	.25	.20	.22
Total Solids, . . . .	13.03	12.02	12.95	14.19
Water, . . . .	86.96	87.97	87.04	85.80

Mother 19 years of age. Grav. ii.

	2 days.	10 days.
Fat, . . . . .	3.77	2.64
Carboh., . . . . .	5.39	6.62
Proteids, . . . . .	3.31	1.70
Salts, . . . . .	.27	.23
Total Solids, . . . . .	12.78	11.19
Water, . . . . .	87.21	88.80

Mother 23 years of age. Grav. ii.

	6 days.	1 mo. 17 days.
Fat, . . . . .	4.30	4.08
Carboh., . . . . .	5.38	6.91
Proteids, . . . . .	2.79	1.44
Salts, . . . . .	.23	.19
Total Solids, . . . . .	12.71	12.61
Water, . . . . .	87.28	87.38

#### THE LATER MONTHS OF LACTATION.

During the later months, when the function of lactation is preparing for cessation, certain changes are to be expected. The quantity of fat still shows marked variation. The sugar, gradually increasing from the beginning, continues to increase. The proteids, the exact opposite of the sugar, have been gradually decreasing, and continue to decrease. The total solids, which remained constantly at 12.20 per cent. till the seventh month, begin to show a slight decrease at the eighth month, falling to 11.50 per cent. at the fifteenth month. The quantity of ash is now very small, as it has been steadily diminishing from the start.

Examples of milks during the later months of lactation.  
Mother, 34 years; grav. ii.; good supply.

	13 mo. 8 days.
Fat, . . . . .	2.53
Carboh., . . . . .	7.33
Proteids, . . . . .	.65
Salts, . . . . .	.13
Total Solids, . . . . .	10.65
Water, . . . . .	89.34

Mother, 30 years; primipara; fair supply.

	12 mo.	14 days.
Fat, . . . . .	4.44	
Carboh., . . . . .	7.19	
Proteids, . . . . .	.39	
Salts, . . . . .	.14	
	<hr/>	
Total Solids, . . . . .	12.15	
Water, . . . . .	87.84	

#### INFLUENCES CAUSING VARIATIONS OUTSIDE OF THE PERIOD OF LACTATION.

Outside of the period of lactation there are influences which affect the milk. Clinical experience has taught that in selecting a wet-nurse, a primipara is preferable to a multipara, and the age to be preferred is between twenty and thirty. Ludwig states that the milk of multiparæ contains less fat than that of primiparæ, and that women between twenty and thirty years of age have less proteids, sugar and salts, but more fat in their milk, than women between thirty and forty years. In considering these questions, it will not do to average a number of these cases, and to classify them without regard to the other influences. The comparison of the milk of primiparæ and multiparæ must be made only at corresponding periods of lactation. This has been done in the following lists of twenty-three primiparæ and twenty-three multiparæ. The extremes of lactation, that is, before the fifteenth day and after the ninth month, were excluded. The average period of lactation of both classes is three months. The average age of mothers is twenty-five years.

	Average of 23 primiparæ, third month.	Average of 23 multiparæ, third month.	Computed average for third month.
Fat, . . . . .	4.06	3.67	3.83
Carboh., . . . . .	6.52	6.85	6.72
Proteids, . . . . .	1.61	1.35	1.48
Salts, . . . . .	.18	.17	.17
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Total Solids, . . . . .	12.41	12.11	12.20
Water, . . . . .	87.57	87.87	87.80

By comparing these figures, we see that the milk of the primiparæ of this period of lactation is richer in fats, proteids, salts, and total solids, than average milk; the sugar, however, is

less abundant. The milk of multiparæ is just the reverse. Such being the case, we are selecting primiparæ as wet-nurses with justice, for we are obtaining a richer milk.

To ascertain the correctness of preferring the milk of a wet-nurse between twenty and thirty years of age, a number of observations have been made upon equal numbers of primiparæ and multiparæ, and at the same average period of lactation. No considerable difference has been detected. If any exists, it will be demonstrated only after consideration of a larger number of cases.

Although we cannot prove that a wet-nurse between twenty and thirty years of age offers a better milk, still a young woman is more likely to be healthy than one who is older, and, taking all things into account, will be more desirable in the household.

The great law of variation is so active in determining the character of human milk, that its scientific study is rendered difficult. No sooner had a classification of cases been attempted, than differences arose which seemed at first insignificant. These demonstrated the individual idiosyncrasy of the children. One would thrive on one kind of milk, and another on another. What would be detrimental to one child, would prove healthy food for another. Sometimes the chemical analysis showed results which differed widely from the average, and yet the infant maintained good health. It is exceptional for the infant to maintain good health under these conditions, and yet the milk is debarred from being classed as abnormal.

The following analyses are given as examples of what different children thrive on:

Mother, 29 years; grav. ii.; good supply. Infant, female; birth weight, 8 lbs. 2 oz. (3670 grammes); 6 days old, weight, 7 lbs. 11 oz. (3480 grammes).

Fat,	.	.	.	.	.	4.81
Carboh.,	.	.	.	.	.	6.75
Proteids,	.	.	.	.	.	1.84
Ash,	.	.	.	.	.	.26
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Total Solids,	.	.	.	.	.	13.70
Water,	.	.	.	.	.	86.28



Mother, 19 years; grav. i.; supply abundant. Infant, female; birth weight, 8 lbs. 7 oz. (3840 grammes); 7 days of age, weight, 8 lbs. 2 oz. (3684 grammes).

Fat,	.	.	.	.	.	2.93
Carboh.,	.	.	.	.	.	6.55
Proteids,	.	.	.	.	.	2.70
Ash,	.	.	.	.	.	.20
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Total Solids,	.	.	.	.	.	12.38
Water,	.	.	.	.	.	87.61

Mother, 20 years; grav. i.; supply good. Infant, female; birth weight, 5 lbs. 15 oz. (2690 grammes); 16 days of age, weight, 6 lbs. 10 oz. (3000 grammes); spec. grav. 1.030.

Fat,	.	.	.	.	.	4.29
Carboh.,	.	.	.	.	.	6.52
Proteids,	.	.	.	.	.	1.93
Salts,	.	.	.	.	.	.20
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Total Solids,	.	.	.	.	.	12.95
Water,	.	.	.	.	.	87.04

Mother, 27 years of age; grav. ii.; supply good. Infant, male; birth weight, 6 lbs. 9 oz. (2970 grammes); 29 days of age, weight, 10 lbs. 8 oz. (4761 grammes); spec. grav. 1.033.

Fat,	.	.	.	.	.	1.85
Carboh.,	.	.	.	.	.	6.90
Proteids,	.	.	.	.	.	1.34
Salts,	.	.	.	.	.	.25
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Total Solids,	.	.	.	.	.	10.36
Water,	.	.	.	.	.	89.63

Mother, 21 years; grav. i.; good supply. Infant, male; birth weight, 6 lbs. 9 oz. (3070 grammes); 4 months, 23 days, weight, 17 lbs. 13 oz. (8070 grammes); very fat.

Fat,	.	.	.	.	.	5.83
Carboh.,	.	.	.	.	.	6.18
Proteids,	.	.	.	.	.	1.89
Salts,	.	.	.	.	.	.17
						<hr/>
Total Solids,	.	.	.	.	.	14.09
Water,	.	.	.	.	.	85.90

Mother, 24 years; primipara; good supply. Infant, male; birth weight normal; 5 months, 1 day old, weight, 13 lbs. 8 oz. (6122 grammes).

Fat,	.	.	.	.	.	2.01
Carboh.,	.	.	.	.	.	6.99
Proteids,	.	.	.	.	.	2.60
Salts,	.	.	.	.	.	.13
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Total Solids,	.	.	.	.	.	11.73
Water,	.	.	.	.	.	88.26

In these cases there are great variations in the constituents, yet in none was any disturbance of nutrition observed. Another reason why no strictly scientific classification of the cases could be made was the fact that the same woman's milk varied at different times; and it was not to be expected that the analysis of one milk would hold good for the following, or even that the morning's analysis would correspond with that of the evening.

Mother, 21 years; primipara. Infant, 2 months, 23 days.

	10 A. M.	4 P. M.
Fat,	4.40	2.00
Carboh.,	6.93	6.64
Proteids,	2.06	.47
Salts,	.23	.15
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Total Solids,	13.66	9.28
Water,	86.33	90.70

Even different parts of the same nursings differ. If we divide the pumpings from the same breast into three equal parts, keeping first, second and third portions separate, we shall find differences as follows:

Fore Milk.	1st Case.	2d Case.	3d Case.	Average.
Fat,	3.66	1.98	1.19	2.27
Carboh.,	6.82	6.56	7.00	6.79
Proteids,	1.45	.58	.56	.86
Salts,	.16	.12	.15	.14
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Total Solids,	12.11	9.26	8.95	10.11
Water,	87.88	90.73	91.04	89.88

Middle Milk.	1st Case.	2d Case.	3d Case.	Average.
Fat, . . . . .	4.40	2.00	1.99	2.79
Carboh., . . . .	6.93	6.64	7.04	6.87
Proteids, . . . .	2.06	.47	.69	1.07
Salts, . . . . .	.23	.15	.16	.18
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Total Solids, . . . .	13.66	9.29	9.87	10.94
Water, . . . . .	86.33	90.70	90.12	89.05
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Strippings.				
Fat, . . . . .	5.11	3.12	2.78	3.65
Carboh., . . . .	6.92	7.11	6.93	6.99
Proteids, . . . .	1.00	.72	.95	.89
Salts, . . . . .	.20	.17	.12	.16
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Total Solids, . . . .	13.25	11.14	10.79	11.73
Water, . . . . .	86.74	88.85	89.20	88.26

From these figures it will be seen that the fat and total solids represent a larger per cent. in the middle milk than in the fore milk, and in the strippings than in the middle milk. The averages also show a rise in the carbohydrate, but regarding any changes in the other constituents, our number of cases is not sufficient to warrant drawing any conclusions. §Harrington has determined the same increase in the fats and total solids in cows' milk.

The samples from the two breasts also show a variation, the milk taken at the same time from the right and left showing apparent differences, as the following cases will illustrate:

	Right breast. Spec. grav. 1.032.	Left breast. Spec. grav. 1.032.
Fat, . . . . .	3.73	3.48
Carboh., . . . . .	6.77	6.54
Proteids, . . . . .	1.38	2.47
Salts, . . . . .	.22	.26
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Total Solids, . . . . .	12.15	13.74
Water, . . . . .	87.53	86.25
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	Right breast. Spec. grav. 1.030.	Left breast. Spec. grav. 1.030.
Fat, . . . . .	3.32	2.52
Carboh., . . . . .	6.76	6.62
Proteids, . . . . .	1.62	1.80
Salts, . . . . .	.21	.22
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Total Solids, . . . . .	11.93	11.18
Water, . . . . .	88.06	88.81

	Right breast. Spec. grav. 1.029.	Left breast. Spec. grav. 1.027.
Fat, . . . . .	3.77	5.61
Carboh., . . . . .	6.89	6.77
Proteids, . . . . .	2.69	1.19
Salts, . . . . .	.20	.20
Total Solids, . . . . .	13.56	13.79
Water, . . . . .	86.43	86.20

Each one of these cases shows variations which are apparent, and in some cases quite marked. We know that the quantity and quality of the milk depend largely upon the demand for it, and especially upon the character of the nursing. If the infant is hearty, and nurses vigorously, the quantity is increased and the quality improved.

The next case is the milk of a woman who nursed her own healthy baby from the right breast, and a poor, miserable foster-child from the left breast. The foster-child labored under the disadvantage of its weakness, and being nursed irregularly and grudgingly.

	Right breast. Spec. grav. 1.028.	Left breast. Spec. grav. 1.029.
Fat, . . . . .	3.96	2.45
Carboh., . . . . .	7.04	7.04
Proteids, . . . . .	1.17	1.02
Salts, . . . . .	.20	.20
Total Solids, . . . . .	12.38	10.73
Water, . . . . .	87.61	89.26

The next analysis is that of a woman who had but one functioning breast, the other having been dried up at three weeks on account of a cracked nipple.

	Right breast.
Fat, . . . . .	3.11
Carboh., . . . . .	7.33
Proteids, . . . . .	.98
Ash, . . . . .	.15
Total Solids, . . . . .	11.60
Water, . . . . .	88.39

The baby is eight months, ten days old, perfectly healthy, and above the normal weight. The case demonstrates that on



healthy breast can provide enough good milk for an infant's nourishment.

Among our cases are those of mothers who are nursing only their own children, those who are nursing their own and half nursing a foster-child beside, and those nursing two children. After careful analysis and compilation of these cases, no evidence was found to show that increased frequency of the nursings modified, in any way, the character of the milk.

A review of the foregoing observations leads to the following conclusions:

(1) The fat shows no constant changes during lactation. Its most marked characteristic is its variability.

(2) The carbohydrate, on the second day of lactation, is low, but rises rapidly during the first few days. This increase continues, but less rapidly, up to the end of lactation.

(3) The proteids pursue a course the reverse of the carbohydrate.

(4) The salts diminish similarly to the proteids.

(5) The total solids are represented by 12.20 per cent. till the later months of lactation, when they decrease steadily.

(6) The colostrum period has low carbohydrate, with a tendency to increase rapidly, and high proteids and salts, with a tendency to decrease rapidly.

(7) The milk of the later months of lactation shows a deficiency in proteids, ash, and total solids.

(A study of *Abnormal Milks* will be reported in the next number.)

(Continued in February Number.)

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\* Beiträge zur Physiologie der Muttermilch und ihren Beziehungen zur Kinderernährung.—*Jarb. f. Kinderh.*, Leip., 1883, n. F. xx., 359-402.

† Ueber Veränderungen der Frauenmilch und des Colostrums bei Krankheiten der Wöchnerinnen.—*Arch. f. Gynaek.*, Berl., 1894, xlv., 342-357.

‡ Rotch's Pediatrics.

§ Rotch's Pediatrics.

## Clinical Memoranda.

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### AN UNUSUAL DEFORMITY OF THE ARM.\*

BY J. M. KRIM, M.D.

Louisville, Ky.

This little boy, aged eleven years, has a peculiar defect about the arm. The history is that two years ago, while playing, he jumped from one part of a stable to another and fell through the floor, bruising his arm between the elbow and shoulder joints. The bone was not fractured; he felt no severe pain at the time, and there has been none since. The defect is very evident by even a superficial examination. The arm is slightly swollen and a deformity of the bone can be easily felt. I do not believe it is malignant. To my mind it is a plain case of bony exostosis, and possibly the injury received in the fall may have stimulated this bony growth. There has been absolutely no pain evinced for a long time, which is a point against malignancy. There has been no pain, so far as I can learn, and nothing to call attention to the trouble except a little soreness immediately after receipt of the injury two years ago. If the trouble were malignant there would be more or less constant pain. As regards the history the enlargement was first felt one and a half years after receipt of the injury, or about six months ago. I saw the child shortly after he received the fall; there was no bony enlargement at that time, nor did he complain of any pain.

Dr. W. C. Dugan in commenting on the case said that it was a very interesting one. Whether the trauma had anything to do with it or not, he was unable to say. He did not think it was a malignant growth; its location was rather against the probability of that. It was very rare to find malignant disease in the diaphysis; it was more often found in the epiphysis. This growth was sub-periosteal, probably an exostosis or bony growth of the ordinary variety. It might be a sarcoma, but that was doubtful; it came out too abruptly for such a neoplasm. If

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\* Reported to the Louisville Clinical Society.

it were a medullary growth it would be more symmetrical or fusiform, so to speak, and not a direct protrusion. He would not resect it but simply make an incision, being careful to avoid the blood vessels, and the musculo-spiral nerve, then with a chisel after turning back the periosteum, cut away the bony growth. If there was then a suspicion of malignancy, a more radical operation should be performed. If it were a malignant growth, nothing less than a shoulder joint amputation would do any good.

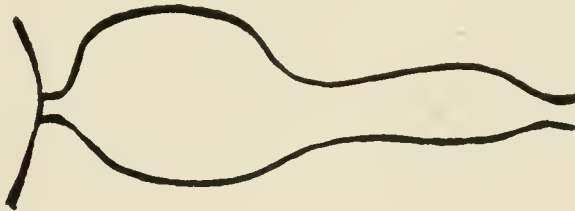
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## A CYSTIC TUMOR OF THE UMBILICAL CORD.

BY MORTIMER H. BROWN, M.D.,

Louisville, Ky.

On November 10th, I delivered Mrs. O., a primipara, aged thirty-four years, of a healthy male child. The child was normal in every respect and weighed nine pounds. The cord was of unusual size. Eight inches from the umbilicus and com-



mencing close to the body there was a semi-fluid tumor measuring two inches in circumference and four inches in length. The cyst was oval in shape and was filled with a pinkish fluid and Wharton's jelly. The cyst had to be evacuated and the remains cut away before a ligature could be applied to the cord.

5124 WEST WALNUT STREET.

## Clinical Sketch.

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### SPORADIC CRETINISM.

Sporadic cretinism is a form of myxœdema due to congenital absence of the thyroid gland. "The important criteria," says Osler, "are the physiognomy, the shape of the head, stunted growth, and the condition of the connective tissues."

The physiognomy is distinctive. The face is large and broad; the features are puffy and blurred; the nose is broad and flat, and depressed at the bridge; the eyes are lustreless and partly obscured by the puffy lids; the cheeks are baggy; the mouth is partially open; the lips are thick and the enlarged tongue protrudes between them. The face, as a whole, is often very repulsive.

The head is expanded in the transverse diameter, and contracted in the antero-posterior diameter, resulting in the condition known as brachycephalous. There is premature ossification of the occipital and sphenoid bones, but ossification of the anterior fontanelle is long delayed.

The child is a dwarf, the growth always being interfered with. The neck and extremities are short and thick; the hands and feet are thick and broad. The abdomen is prominent, being frequently enormously enlarged. Umbilical hernia is very common.

The condition of the skin and connective tissues in cretinism is always characteristic. The rough, dry skin is wrinkled, thickened, and pendulous. Perspiration rarely or never occurs. The hair is dry, thin, and coarse. The subcutaneous tissue of the hands, feet, and eyelids is the seat of a rather firm œdema. These regions are puffy, but do not pit on pressure. In the supra-clavicular fossæ are found very peculiar soft, but elastic swellings, known as fatty tumors of pseudo-lypomata.

The thyroid gland cannot be detected by palpation in most cretins. Göitre may, however, be present. The rule regarding its presence is not an invariable one. In endemic cretinism göitre is common, pseudo-lypomata are rare; in sporadic cretinism pseudo-lypomata are common, göitre is rare.



Impairment of mental power is one of the most constant and important features of cretinism. The mind, like the body, is undeveloped, and its action is extremely sluggish. The degree of mental impairment varies greatly. Some cretins are helpless idiots; others, in which the disease is of mild type, show simply sluggishness of mental action. Between these extremes are found every degree of mental deficiency. The temperament is usually placid and the child is quiet and contented, and of affectionate disposition. It rarely or never cries or sheds tears. The special senses, while blunted and sluggish in action, are not otherwise impaired.

Most cretins are anæmic, but rhachitis is not commonly present. The temperature is sub-normal; the action of the heart is not strong. The tendon reflexes are normal. These children are better in warm weather than in cold. The teeth are delayed in their appearance; they decay early, and frequently appear as blackened and unsightly stumps.

The remarkable results obtained by the thyroid treatment in some cases of cretinism have of late attracted much attention, and have rendered the disease of particular interest. Full details regarding that treatment, with illustrations showing the characteristic appearances of cretinism, may be found in the issue of this journal for May, 1895, Dr. J. P. West's case; for February, 1896, Dr. J. Henry Fruitnight's case; and for September, 1896, Dr. H. H. Vinke's case. Other notable cases of cretinism were reported in this journal by Dr. C. W. Townsend in November, 1892; by Dr. William P. Northrup in November, 1894; and by Dr. William Osler in February, 1895. The case reported in the present number by Dr. Townsend shows extremely well many of the appearances characteristic of cretinism—the stunted growth; the large face with blurred features, broad and flattened nose, puffy lids, and thick lips; the umbilical hernia; the thick feet and hands; the passive attitude; and the vacant, stupid expression.

# ARCHIVES OF PEDIATRICS.

DEVOTED TO THE

DISEASES OF INFANTS AND CHILDREN.

JANUARY, 1897.

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Edited by FLOYD M. CRANDALL, M.D.,

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Infants' Hospital.*

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## IS PEDIATRICS A SPECIALTY ?

We have several times had occasion to refer to this question and it is again brought to notice by an admirable address by Dr. S. W. Kelley on the past, present, and future of pediatrics, an abstract of which will be found on another page of this number. The subject has elicited considerable discussion of late and very diverse opinions have been expressed regarding it. The diversity of opinion arises largely from the lack of agreement regarding the meaning of the word specialty. The word varies greatly in its significance as applied to different departments of medicine. The specialist on the eye, skin, and throat, in most cases devotes his attention wholly to his own department and refuses general practice. There are, on the other hand, medical men in New York who have the reputation far and wide as specialists on diseases of the heart and lungs. Patients are sent to them from all parts of the country for special advice. Yet, so far as we know, there is not a man in the city who devotes himself exclusively to the diseases of these two organs and refuses consultations on other diseases. They practice the specialty of general medicine, which includes all the various general febrile diseases and diseases of the abdominal organs. While the term *expert* might perhaps be more appropriately applied to them, these

men are usually considered and are referred to as specialists in diseases of the heart and lungs. The so-called abdominal surgeons are almost without exception either general surgeons or gynecologists.

There are, in fact, close specialties in which the practitioner confines himself strictly to his department, and there are broad specialties in which the practitioner becomes an expert but does not and cannot limit himself entirely to one class of disease. Of this latter class, pediatrics is a most striking example. It is an offshoot of the department of general medicine and must always continue to be closely allied to it. This is partially true of every specialty. Pediatrics is, however, as properly a specialty as is ophthalmology. Man, the highest animal of creation, starts in life the most imperfectly developed and the most helpless of all. The formative and developmental period, therefore, is in many regards the most important one of his life. Hence, the proper management of infant man in health and the treatment of the many diseases peculiar to this period of growth and development form a specialty of very great importance. The truth of this statement is not modified by the fact that the majority of sick children are treated by the general physician. He may become expert also, in gynecology or laryngology, but they become none the less specialties. That pediatrics is the special department in which the general practitioner most practices, does not render it the less a specialty.

Although a very broad one, pediatrics is in every sense of the word a specialty, in which the most common practitioner is the general physician. But there are, also, numerous practitioners who as truly merit the name of specialist as does the dermatologist or neurologist. It is true that the number of men who devote themselves exclusively to the diseases of children is comparatively small. Most pediatric practitioners, like the specialist on diseases of heart and lungs, become expert in their own department, but are also skilful in general medicine. One of the most learned pediatrists of this country is not infrequently called

in consultation in difficult and obscure adult cases, largely because the vast knowledge he has gained in the study of diseases in children has rendered him conversant with all disease, at whatever age it may occur. It is in fact impossible to be a successful pediatricist without being at the same time a good general practitioner.

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### SPECIALISTS AND SPECIALTIES.

A medical specialist differs widely from the poet, who we are told is "born, not made." The medical specialist is made, not born. No specialist has ever yet been born full fledged from a medical college, though occasionally a young man imagines that such a miracle has been performed. The fledgling who supposes that a medical diploma and a post-graduate course can make a specialist, deceives himself and endangers the safety of the community. Such specialists have done untold harm to the profession. The eye, the ear, the skin are not simple appendages, each performing its duties independent of the rest, to be treated without reference to the other organs and the condition of the body at large. The successful specialist must also be a competent general physician. In no department of practice is this more true than in pediatrics. No man can ever become a successful practitioner among children, who has not a broad and thorough knowledge of general medicine. We have rarely seen a better description of the method by which the successful specialist is made than the following taken from the address of Dr. Kelley, referred to in the preceding article:

"I tell my young friend that it will be time enough when he has thoroughly grounded himself in the general principles and practice of his profession, and had ten or fifteen years of experience, to think of devoting his time to some one line more than others. I would not discourage any young practitioner from endeavoring to increase his knowledge and perfect his skill in certain particular lines as he may have talent, taste, or opportunity, for the field has become too wide for one to become expert in



everything. If by and by he becomes wise or skilful beyond his fellows in a certain line of work, and they keep him so busy therein that he has no time for anything else, I can see no objection to his doing that work, whether he is called a *specialist* or whether he is called an *expert*. If all specialists were made in this way there would be no cause for complaint. In regard to pediatrics, it is probable that in all large centres of population certain doctors will become known as particularly expert in diseases of children, and whether they are called pediatricists or specialists matters little—they will be called frequently in consultations, and their practice will be largely, perhaps in some instances entirely, among children.”

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#### THE AMERICAN PEDIATRIC SOCIETY.

The next meeting of this Society will be held in Washington in the latter part of May, 1897, in conjunction with the Congress of American Physicians and Surgeons. The formation of the programme is well begun and it is to be hoped that the meeting will not fall short of the high standard already set by the Society. It is desirable to group papers on similar subjects and if possible to have them bear some relationship to each other. It would greatly facilitate such an arrangement if the members would forward the subjects of their proposed papers as early as possible. This would facilitate the issuing of a preliminary programme at an unusually early date. The early publication of such a programme would greatly aid the members in writing their papers by showing the subject upon which each would write and the general trend of the meeting.

The members of the Society are especially requested to leave no stone unturned to secure to the collective investigation every authentic case of laryngeal diphtheria, whether operated on or not, in the United States and Canada, treated with antitoxin. To render the test satisfactory, there must be collected a large number of well observed cases. The profession has been

very prompt to respond in this second investigation, and reports have already come in. Some of the reporters have manifestly not read the instructions and their returns are worthless. It is very desirable that only authentic and carefully observed cases be reported.

We are much pleased to announce that the Society will be represented in the joint discussion in the Congress by Dr. William Osler, a champion who can stand for no society without bringing honor upon it. The subject of the discussion is the Internal Secretions; Dr. Osler will take up the subject of Cretinism. He is anxious to obtain reports of all the cases of cretinism treated in the United States since the introduction of the use of the thyroid extract. Any physician who has treated such a case will confer a favor by communicating with Dr. Osler.

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#### CERTIFIED MILK.

We are pleased to receive from Buffalo a circular bearing the title, "Certified Milk." By it we learn of the efforts which have resulted in obtaining a supply of fresh, clean, and wholesome milk, for the use of infants and invalids in that city. The plan is evidently modeled after that of Dr. Coit, the same general scheme being followed as was devised by him in securing a wholesome milk supply for Newark. The milk is obtained from a properly managed dairy, under close supervision in all its details. Every precaution is taken to avoid contamination of the milk up to the time of its delivery to the consumer. All the arrangements are under the supervision of a Committee of Physicians, who have no pecuniary interest in the sale of the milk. One of the prime movers in this good work, and now the chairman of the Committee of Physicians, is Dr. Irving M. Snow, an esteemed collaborator of this journal. The other members of the Commission are Drs. Rochester, Ross, Hopkins, and Stockton. The movement is deserving of the utmost success, and it is sincerely to be hoped that it will be fully appreciated by the people of Buffalo, and will receive from them the support it so justly merits.

The admirable paper on the chemical analysis of breast milk in the present number is worthy of most careful reading. No such extensive and elaborate work along the lines undertaken by the authors of the paper have ever before been attempted. The results are very striking, and must prove of extreme value in all future work on infant feeding. The subject will be continued in the next number by the report of extensive studies and chemical analyses of abnormal breast milks.

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We would call attention to the admirable opportunity offered in the present number for the care of a feeble-minded child. The place and surroundings are admirably adapted to the purpose, and an unusually good nurse is available, while the medical attendance would be of the best.

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The following are the chief provisions of the law relative to child labor recently passed by the Legislature of New York:

Children under eighteen and women under twenty-one years shall not work in stores after nine o'clock at night, or more than sixty hours a week.

No child shall be so employed who is under fourteen. Every child employee under sixteen shall be registered in the stores, and shall have a certificate of age and physical fitness from the Health Board, as well as an affidavit from its parents, showing that it has regularly attended school.

Children under sixteen, who cannot read and write English, shall be employed in stores only during vacation time.

Employees in stores shall be provided with toilet-rooms that are sanitary and clean, and separate the sexes. Women and children shall not be employed in unsanitary store basements.

Storekeepers shall provide seats for female employees, and permit a reasonable use of them.

The law is to be enforced by the Boards of Health.

## Bibliography.

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**Deformities. A Treatise on Orthopædic Surgery. Intended for Practitioners and Advanced Students. By A. H. Tubby, M. S., Lond., F. R. C. S., Eng.** *Illustrated with fifteen plates and 302 figures, of which 200 are original, and by notes of 100 cases.* London and New York: Macmillan & Co., 1896. Pp. xxii.—3—598. Price \$5.

This work is based on the author's personal experience as an orthopædic surgeon to several London hospitals. The illustrative cases are drawn almost entirely from his own note-books, and 200 of the plates are original. The book, however, cannot be called strictly a personal one, for orthopædic literature of recent years has been drawn upon largely. American writers, and particularly the Transactions of the American Orthopædic Association, are quoted with especial frequency. The general tone of the book is judicious and conservative, and upon unsettled and disputed questions the author does not show himself to be an extremist. He is an excellent clinician, and the clinical portions of the book furnish much pleasant reading. He holds very closely to his design of writing a book on deformities. As he does not include diseases of the joints, it cannot be regarded as a complete work on orthopædic surgery, as that term is usually understood.

The classification is somewhat peculiar, but adapts itself very well to the author's design. The first section, of nine chapters, is devoted to deformities of the spine; the second section to deformities of the neck, chest, and upper extremities; the third is devoted to rhachitis and resulting deformities; the fourth section, of nine chapters, is devoted to diseases of the lower extremities, the last section is devoted to contractures, congenital displacements, and the deformities resulting from cerebral and spinal paralysis. Numerous congenital deformities which lie within the domain of plastic surgery are not included; neither are many phases of diseases of the bones and joints, such as arthritis and tubercular otitis.

The sections on treatment are less satisfactory than are the clinical sections. The apparatus described and illustrated is not all of the most modern. The pages devoted to mechanical



treatment are in places quite disappointing. We do not find very much that is new, and the book does not add very materially to our knowledge of orthopædic surgery. It presents our knowledge upon deformities, however, in a clear and judicious manner, and is a credit to both author and publisher.

**A Treatise on Obstetrics. For Students and Practitioners.**  
**By Edward F. Davis, A.M., M.D.** *Professor of Obstetrics and Diseases of Infancy in the Philadelphia Polyclinic, Clinical Professor of Obstetrics in the Jefferson Medical College of Philadelphia. With 217 engravings and 30 full-page plates in colors and monochrome.* Lea Brothers & Co., Philadelphia and New York. 1896. Price, cloth, \$5.00. Pp. xi.—553.

The need of another work on obstetrics at the present time is not quite clear, though the author has produced an excellent and extremely practical book. One of the most striking peculiarities is the unusual amount of space devoted to the infant. We have several times of late had occasion to refer to the importance of devoting more attention to the infant than was given to it by the elder obstetric writers. The writer in the present case has gone to an extreme which might warrant some criticism. It is true that the obstetrician must assume the care of the young infant and should be conversant with the pathological conditions which may arise immediately after birth. The advisability of introducing a chapter on dentition and certain abnormal conditions of the latter half of the first year is very doubtful. The reasons for introducing them would apply equally to incorporating into a work on obstetrics a complete treatise on pediatrics. The section, however, is extremely interesting. The chapter on injury at birth is worthy of special notice. The chapter on septic diseases is indefinite in its method of statement. We are told that "septic infections" may enter the body by several channels. In the present state of our knowledge more definiteness might have been expected. The hemorrhagic diseases of infancy and the hemorrhages due simply to traumatism are described under the same heading without farther classification. The management of premature infants is well described, but the portion devoted to artificial feeding is less satisfactory. The chapter on lactation is a most excellent one and is filled with practical facts. Had the author utilized the space assigned to the infant to describe more fully the diseases of very early infancy to the exclusion of diseases of a later period, the work would have been less subject to criticism.

The last section of the book devoted to the jurisprudence of obstetrics is particularly good. The illustrations are in most cases extremely good, being in large part original, and the book is, in its general make-up, an attractive one.

## Society Reports.

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### NEW YORK ACADEMY OF MEDICINE—SECTION ON PEDIATRICS.

Stated Meeting, Nov. 12, 1896.

WALTER LESTER CARR, M.D., CHAIRMAN.

#### CLUBFEET WITH ABSENCE OF TOES AND FINGERS, AND WITH CONSTRICTION BANDS OF LEG AND FINGER.

DR. LE ROY W. HUBBARD exhibited a case of this kind. Around the leg was a linear depression, while some of the toes had been amputated *in utero*, and there was also a constriction on the second finger of the left hand. He stated that in his opinion the sulcus on the leg was not due to the pressure of the cord, for if there had been sufficient pressure from this cause, it would have probably resulted in gangrene of the foot, or an interference with the circulation in the cord itself. It was probably due, as in the case of the other malformations present, to an amniotic band.

THE CHAIRMAN said that it was not usual for the membranes to give rise to a linear constriction.

#### AN EPIDEMIC OF GLANDULAR FEVER.

DR. J. P. WEST, of Bellaire, O., read a paper with this title, which will be found in full in the December number.

DR. AUGUST SEIBERT said that he had published two articles on glandular fever, and had probably seen about two dozen cases of this affection in the past five years. He referred particularly to the case of a child, seen by him a few years ago, in which a diagnosis of meningitis had been made prior to coming under his observation, because of the fever, headache and opisthotonos. There was a history of a chill and of diarrhœa, the posterior lymph nodes on the right side were swollen and indurated, and there was an evening rise of temperature to 104° or more. This temperature range continued for about four weeks, and did not yield at all to quinine. He had observed only

one death from glandular fever, and that had occurred quite suddenly from compression of the pneumogastric nerve after the extension of the lymphatic enlargement to the other side of the neck. The cases seen by him presented the following features: (1) The disease is usually unilateral at first; (2) the lymph nodes are very hard, and exquisitely tender; (3) there is no œdema of the surrounding tissue or suppuration.

DR. HENRY KOPLIK said that although he had watched for a case of glandular fever ever since the publication of Pfeiffer's monograph, he had never met with one. While the name "glandular fever" might be the best one at present at our disposal, it certainly was not particularly descriptive. It had occurred to him that the disease might be due to an infection of the lymph nodes, with material having its origin in the bowel. The absence of suppuration would indicate that this infection was not septic or pyæmic.

DR. FLOYD M. CRANDALL said that there were many unclassified affections which were often encountered in practice. This disease had no doubt been seen by others, but had not been recognized nor classified. The paper just presented should serve a useful purpose, because the clearness of its description made it evident that this disease, which was certainly not of common occurrence, had a distinct individuality.

DR. ROWLAND G. FREEMAN objected to the term "glandular fever," on the ground that it was not a disease of the *glands*, but one affecting the lymph nodes.

#### THE MODE OF EXAMINING SICK CHILDREN SO AS TO PROMOTE GREATER ACCURACY IN DIAGNOSIS.

DR. J. LEWIS SMITH read portions from a paper having this title. He said that a physician who would succeed with sick children must be willing to devote considerable time to the investigation of their diseases, and could not expect to do well if he made hurried visits and superficial examinations. He should enter the nursery quietly, and while obtaining from the mother or nurse the salient points of the history, should be carefully observing the child from a distance. In this way he would often avoid alarming the child, would secure a better knowledge of the case, and would gain the little one's confidence. It was always well to keep the child amused and in good humor, and to this end he had frequently found it useful to call to his aid a



prescription paper or the percussion hammer. Great care must be exercised in drawing conclusions regarding the significance of fever in children. The physician should remember that a little fright was sufficient to cause a sudden and very considerable elevation of temperature in an emotional child. As an example of this, the speaker exhibited a temperature chart, showing elevations of the temperature to  $104^{\circ}$  or  $105^{\circ}$ . These had been produced in a healthy, but very nervous and emotional child, by simply slamming the door, or causing some person to suddenly and unexpectedly enter the room. A long experience had taught him that when the temperature remained for any length of time below the normal— $97^{\circ}$  or  $96^{\circ}$  F.—in a feeble and poorly nourished infant, it indicated almost invariably the near approach of death. It was well to remember that in cases of long-standing illness, with general emaciation, the brain of the child would participate in the wasting, and that although there would be some increase in the quantity of cerebro-spinal fluid, it would not compensate for the atrophy of the brain, and that hence the fontanelles would be depressed. If, when confronted with an acute illness in a child, the cause of the sickness was not obvious, the physician should not fail to carefully explore the throat. Indeed, a thorough and painstaking examination should be the rule of practice with the pediatricist. He felt positive that typhoid fever was not uncommon among the children in this city, but that it was often wrongly diagnosticated, or falsely reported as malaria. The disease was so mild that the child did not go to bed, but remained sitting around in a dispirited manner, often hugging the fire and refusing to eat. The fever in these cases would not yield to quinine, showing that it was not malarial. He had known a nurse, immediately after having taken care of two children affected in this way, to come down with a typhoid fever, which ran a very severe but typical course.

DR. JOSEPH E. WINTERS, in opening the discussion on this paper, expressed the opinion that time, patience and care, rather than special skill, were the elements necessary to make an accurate diagnosis of disease in children. He thought that, if anything, diagnosis was easier in children than in adults, for the reason that the latter often led the physician astray by insisting in giving undue prominence to the subjective phenomena. In children, we were accustomed to listen to the voice of nature,



and for that reason the diagnosis was more likely to be correct. What had been said about the ease with which marked fluctuations of temperature could be induced in children was sufficient to show that the physician could not hope to succeed in caring for sick children if he would not give plenty of time to observing his cases. These sudden and marked elevations of temperature from various trivial causes had been responsible for a reckless use of the new antipyretics, and had caused many deaths.

DR. CRANDALL said that the children who would require examination by the physician could be conveniently divided into three classes, *viz.*: (1) the good children; (2) the timid children, who would tax his patience and skill; and (3) the ugly children. The older children in the first class were likely to give trouble by giving very misleading answers should the physician happen to put to them leading questions. The third class could be best managed by a quick, firm, and decided manner of making the examination. There was nothing to be gained by humoring and waiting for such children. If the physician did not early accustom himself to make the diagnosis, even in cases of diseases of the chest, while the child was crying, he would find that it would often happen that he would be unable to make the diagnosis at all. Not only should the throat and chest be carefully examined, but it should be a rule to inspect the whole body surface in every doubtful case. As an example of the importance of this rule, the speaker referred to a case which had been brought to his office, and which had puzzled him because he had been unable to find an adequate explanation of the fever and constitutional disturbance that were present. He had thought at the time that he had thoroughly inspected the body surface, but when the mother had returned home with the child, it was found that there was a patch of erysipelas on one ankle. This had been covered by the stocking, and had escaped his observation. Another point deserving of attention was the tendency of older children to imitate diseased conditions. In this way it was easy for nervous and hysterical children to deceive a physician.

DR. LOUIS FISCHER said that, in his opinion, more skill was required in examining children than adults. It should be an easy matter at the present time to differentiate between malaria and typhoid fever by examining the blood for the malaria

plasmodium. The information to be derived from an examination of the urine of children should receive more attention.

DR. J. MILTON MABBOTT said that he hoped Dr. Smith would publish not only the chart showing the extraordinary fluctuations of temperature that might occur in a child from slight fright, but that he would give with this the *rapidity* of these fluctuations. Such a chart should teach the wise physician that more good could sometimes be done by making two or more short visits to a nervous child than one long one.

DR. WILLIAM L. STOWELL said that the examination of little children could often be rendered easier by having the mother hold the child so that it did not face the physician. The easiest method of examining the throat was to grasp the child by the back of the neck, and control the motions of the head between this hand and the one holding the tongue-depressor.

THE CHAIRMAN said that it was just as important to determine that nothing was the matter with a child, as to diagnosticate the presence of a disease. It should be constantly borne in mind that high temperatures and apparently serious symptoms may often be due entirely to functional derangement of the alimentary tract.

DR. SMITH, in closing the discussion, said that in regard to examinations of the throat, a word of warning might not be amiss. In examining the throat in children suffering from scarlet fever or diphtheria, the physician should stand behind the patient, and so give no opportunity for secretions to be coughed into his face, or find lodgment on his clothing.

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**Diet in Acute Diarrhœa.**—In the insidious beginning of the disorder, when large, pasty stools are being passed, the child, if an infant, should be fed with weak veal broth and barley water in equal proportions; whey with cream; the yolk of one egg beaten up with broth or whey, and Mellin's food mixed with whey or barley water. The meals should be frequently varied during the day, and the quantity allowed must be strictly proportioned to the infant's powers of digestion. For medicine he may take a powder of rhubarb (gr. ij–iij) and aromatic chalk (gr. iij–v) every night for three nights; and in the day, a mixture composed of half a drop or a drop of laudanum with four or five grains of the bicarbonate of soda in some aromatic water.—*Eustice Smith.*

## Current Literature.

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### MEDICINE.

**Kelley, S. W.: Pediatrics: Past, Present and Prospective.**  
(*Cleveland Medical Gazette*. September, 1896.)

This was an address delivered before the last meeting of the Ohio State Pediatric Society. To estimate the progress, present state, and prospects of pediatrics, the author sent letters of inquiry to many teachers in various medical schools of this country, and a few in Great Britain. The replies were mostly from teachers of pediatrics, but a few were from the deans or registrars of colleges in the United States and Canada. Sixty-five of the replies were sufficiently explicit for tabulation.

In the sixty-five colleges in this country and Canada, pediatrics is taught as a separate branch in fifty, and in connection with another chair in fifteen. The teaching is acknowledged to be didactic only in nine colleges, clinical only in five, and claimed to be both didactic and clinical in fifty. So far as one may judge by these answers, it is the belief of the writers that it is expedient that there be a separate chair of diseases of children in the medical college.

Regarding the teaching of medical and surgical diseases, the answers would seem to show that in most colleges the medical diseases are chiefly considered, the surgical diseases being referred to the chair of surgery.

As to the number of hours devoted each week to the teaching of pediatrics, two hours were reported in the greater number of colleges, a large number devoting but one hour per week.

The question, is pediatrics taught to seniors only, or to juniors also? elicited the statements that of fifty-five colleges which gave definite answers, this branch is taught to both seniors and juniors in twenty-eight, to seniors only in twenty-two, to juniors only in two.

The answers would seem to show that in thirty-six out of fifty-one colleges, questions in pediatrics were required in the



final examinations. A decided advance seems to have been made in this regard during the past ten years.

Replies regarding the number of practitioners of pediatrics in various cities were so indefinite as to be of but little value. Twenty-three correspondents believed that it was desirable and practicable to specialize pediatrics, while thirty did not consider it practicable. [Here undoubtedly a definition of the term *specialize* is required.] Replies from England and Scotland would not seem to differ materially from those received in this country, though, on the whole, they are not as liberal toward pediatrics. Mr. Edmund Owen wrote as follows: "I should think it the worst thing in the world for a man to give up his life to the study of *children's diseases*. The effect would be 'cramping' on the individual, and prejudicial, I think, to the interests of sick children." [The writer must be opposed to all specialties, for the same could be written as truly of any other department of medicine.]

In concluding, the author expresses himself as strongly opposed to any form of specialism which is not the outgrowth of experience in general medicine, but expresses the belief that there is less danger of "cramping" influences in confining one's self to diseases of children than to almost any other department of medicine. He concludes with the statement that it is infinitely desirable for the sake of all concerned that the special knowledge of this, as of any other department, be built upon a broad and deep foundation of general knowledge and experience. When this is done, there is no danger of cramping.

**Noyes, William B.: Sporadic Cretinism.** (*New York Medical Journal*. 1896. Vol. xliii., No. 902.)

The author reports a case of cretinism, and gives a lengthy review of the subject. He considers in detail the subject of heredity, which he classifies under three heads: 1, local bodily defect; 2, defect in growth; 3, defect in general vitality. These defects may exist alone or combined. The most striking example of the latter condition is the well-known type, "the degenerate," who shows in some local bodily malformation, of almost any of the varieties mentioned, what we call a stigma, and in his unbalanced, erratic, unnatural mentality a condition so abnormal that its origin, like the stigma, may be sought for in a



previous generation. Many epileptics, inebriates, criminals, and insane patients show the same combination of physical and psychical taint.

These general questions of heredity need to be emphasized because they have a very important bearing on the study of cretinism. While we cannot, of course, say that cretins are degenerates, as the word is commonly used, there is a very significant hereditary element in the entire condition.

If in a young infant the action of the thyroid gland is suspended from any cause, many of the symptoms of myxœdema will occur just as in adults, but modified by the immature condition of the tissues of the child's body. Because the mind is so undeveloped, a myxœdematous process, which in the adult gives rise merely to mental dullness and apathy, in an infant will tend to produce a condition of idiocy not different in its mental condition from the varieties of idiocy arising from other causes, and more marked the younger the child.

The œdema and swelling of the sub-cutaneous tissue will be more marked in the face, tongue, lips and cheeks in a child than in an adult, because the tissues are softer. The pseudo-lipomatous masses, the swollen belly, with an umbilical hernia, are more frequent in children.

A general change in the bony framework of the body causes a striking contrast between the infant and the adult myxœdema. These are such symptoms as the peculiar shape of the skull, the short, thick extremities, lordosis of the spinal column, a change in the bones of the face causing a *retroussé* nose, and a general dwarfed appearance.

Victor Horsley classifies sporadic cretinism as follows:

1. Congenital cretins in whom no thyroid whatever is present, and who generally die at birth. Their appearance is typical, and the characteristic bone and cartilage changes, with their resulting deformities, are already quite far advanced at birth.

2. Cases where the process has started before birth, but there is enough thyroid to enable the persons to live and cause a slower development of symptoms. They sometimes have a goître, and generally have myxœdema. There is not much intelligence, but the physical changes come more slowly.

3. Cases where cretinism develops in early childhood, which is the common form of sporadic cretinism recorded in the cases of the last two or three years. The health and intelligence may

be excellent until the second to the fifth year, and then growth and development suddenly stop, and the symptoms of cretinism begin to appear. This form has more resemblance to adult myxœdema than the previous varieties, but with the stoppage of growth. It reaches its height at the fourteenth or fifteenth year. There is progressive atrophy of the thyroid.

The etiology of sporadic cretinism is even more obscure than that of the endemic form, for no goitrous parentage or territorial or climatic conditions offer an explanation, and every case must be judged on its own merits.

In cretinism all autopsies on record agree in certain changes occurring in the histological development of bone quite distinct from changes occurring in rhachitis, syphilis, or osteomalacia. In the long bones the typical and almost geometrical arrangement of the rows of cells always found where hyaline cartilage is ossifying becomes completely disordered. The rows of cells become irregular, the capsules swell up, and many of the cartilage cells within shrink or disappear. The ground substance itself may become liquefied in places, and all ossification which arises normally in such cartilage is checked, and growth in a longitudinal direction stops. The most marked change is at the junction of the epiphyses and shaft. In some of the autopsies fibrous connective tissue seems to appear around the epiphyses, forming soft, white deposits.

In conclusion we wish to emphasize, first, that the symptoms of cretinism are to be explained as the result of the myxœdematous process in the undeveloped tissues of an infant. Second, a scientific application of the principles of heredity by such methods as have been used in such subjects as deaf-mutism, idiocy, and other nervous diseases, will demonstrate similar relations and yield similar results in cretinism. Though it is as false to infer on general principles that heredity must be the cause of any doubtful condition as to deny it simply because the "family history is negative," a hereditary etiology, even in difficult cases, may sometimes be proved if one carefully takes into consideration not only such general diseases of the parents as tuberculosis, malignant new growths, and various nervous diseases, but all possible stigmata and bodily and mental abnormalities which may appear in the different members of the family in its various branches, if possible, in three generations.

**Fry, Frank R.: A Case of Fatal Chorea.** (*Journal of Nervous and Mental Diseases.* 1896. Vol. xxiii., No. 5.)

The patient was a girl thirteen and one-half years of age. The chorea had been present six weeks when first seen by the author. The movements were very severe, involving face, neck, trunk, and extremities, all about equally. She lay in the centre of a large bed, banked about on all sides with pillows. The administration of nourishment was extremely difficult on account of the constant and severe movements. Deglutition did not seem much impaired. The patient declared that she was hungry, and patiently took what was given her in small amounts—always fluid. When questioned, she insisted that she had no pain, that she was very tired, and asked for something to rest her. It had become impracticable to use a night-vessel, pads being used to receive the excreta, which were not passed involuntarily. The sensorium was clear, and although articulation was difficult and very imperfect, she made all her wants known to her mother. She occasionally became somewhat impatient, but her conduct was surprisingly rational and considerate. On awakening from sleep she had occasionally seemed momentarily delirious or dazed.

There was but little change from the above condition until the last day of her illness. There were no swollen or painful joints, no cough, no abdominal symptoms, nor evidence of complications of any kind. She had no headache, no pain. The urine and blood were not examined. A post-mortem examination could not be obtained. Death occurred five days after the first visit of the author.

The case had all the characters of ordinary chorea, and no evidence of any complicating disease. It will be noticed that the clinical history corresponds with those of other fatal cases which have been reported.

**Theodor: Hemiplegia and Chorea minor in Whooping Cough.** (*Archives f. Kinderheilkunde.* 1896. B. xx., H. iii., iv.)

Theodor has observed two independent attacks of whooping cough in one individual. Twenty-five per cent. of his cases occurred in children under one year of age. Among 638 cases, the majority developed during the warmer months. In but two patients did noteworthy complications occur.



A girl of eight years had an unusually severe attack of whooping cough. Shortly after a severe coughing paroxysm she fell suddenly to the floor. She was unconscious for one and one-half hours. There was high fever. The following day the mind was clear, and there was no fever. The right side of the body, however, was completely paralyzed. The paralysis lasted about four weeks. The leg regained its powers first, so that the child could walk after fourteen days. The urine was frequently examined, with negative results. The heart was normal. Four months after the onset of pertussis a typical chorea minor developed, and lasted four months. There was no indication of rheumatism, and the heart remained normal. The author believes the chorea to have been due to a disturbance set up by the hemorrhage which was probably in the basal ganglia.

The second case was a boy five and one-half years old. He had had scarlet fever, diphtheria, and whooping cough. During the six weeks of the illness, complete paralysis of the left arm and leg developed. The face was not involved. In ten days the parts were as strong as before the attack.

**Jakob di Lorenzo: Obscure Signs of Syphilis.** (*Archives f. Kinderheilkunde.* 1896. B. xx., H. iii., iv.)

The combination of anæmia and athrepsia in the newly-born and in the very young often indicate syphilis in the absence of other causes. Enlargement of the spleen in the apparently healthy, or in an athreptic, is often a sign of latent syphilis when other causes are absent. Enlargement of the liver and swelling of the mesenteric glands suggest syphilis, other causes being absent. Disease of the lymphatic glands, the thyroid and thymus glands, point to syphilis when no other cause can be found. Bone disease in young children, such as periostitis or perichondritis, may, without other signs, be due to latent syphilis. The presence of several of the above typical symptoms in a doubtful case make the diagnosis of syphilis possible.

**Marinesco and Serieux: The Physiological Pathology of Epilepsy.** (*American Journal of Insanity.* 1896. Vol. lii., No. iii.)

A memoir to the Belgian Royal Academy, a portion of which is published in the *Gaz. Hebdomadaire*, in discussing the



pathology of epilepsy, first takes up the physiology of the cortex, holding with Munk and his followers that the cortical convolutions contain the elements necessary for the perception of impressions, and that their excitation causes, according to the degree of the excitation and the region, hallucinations or convulsions. The neurons of the cortex are of three kinds—the perceptive, or the centripetal axis-cylinder neurons, the associative, and the centrifugal or discharging neurons. There is not, they hold, any direct route between the cortex and the muscles; every so-called voluntary, but really reflex movement is made through the intermediation of the lower or spinal centres.

The aura is simply a hallucination of cortical or reflex origin, according as the epilepsy is central or reflex in its nature. In the former the cortex plays the same part as does the epileptogenic zone in peripheral or reflex epilepsy. The loss of consciousness, which is an essential symptom of epilepsy, but which need not necessarily be complete, is explained variously by different authors, some attributing it to cerebral anæmia, some to congestion, and others still to functional interruption of the psychic elements (Herzen and Buccola), or to disturbance of special centres (Bianchi). The authors consider it due to a phenomenon of arrest, bearing especially on the neurons of association. The stimulation of the perceptive elements produces the aura; that of both the perceptive and association elements produces automatism, pre- and post-epileptic delirium, etc.; that of the discharging neurons gives rise to the convulsions.

The cry that has been attributed by Axenfeld to fear, by Billod to spasm of the glottis and thorax, Marinesco and Serieux attribute to excitation of the cortical laryngeal centre of Krause and Horsley. The fall is also one of the motor phenomena, and is not due to the loss of consciousness.

The pupillary immobility and dilatation is also a central phenomenon, as is proven by the fact that if the sympathetic of one side is divided, it fails on that side, while very marked on the other. It is, according to Fr. Franck, one of the most significant organic symptoms. The involuntary discharges of urine or fæces are due to the contraction of the abdominal walls and of the musculature of the bladder and rectum. The intense cerebral congestion is considered as a vaso-motor reflex from the sensory cortex. The biting of the tongue is simply due to the spasmodic contraction of the muscles of the jaws, and those

pushing out the tongue. The salivation is a secretory phenomenon, and not merely the emptying of the gland; the influence of the chorda tympani is exerted by the cortex.

The later symptoms, exhaustion, transitory paralysis, aphasia, etc., are due to the modifications of the cellular elements; they are simply phenomena of nervous exhaustion.

**Peterson, Frederick : Epilepsy.** (*New York Medical Journal*. 1896. Vol. lxiii., No. 23.)

The more we study the clinical and pathological manifestations of epilepsy, the more convinced do we become of the manifold character of its causes. It is not truly an essential disease, but a symptom of a great variety of pathological conditions, which, either remotely or directly, or perhaps in a reflex way, affect the cortical epileptogenic centres. Each patient requires the most rigid examination in order to exclude the many etiological factors which are at times discoverable in cases appearing at first sight to be purely idiopathic. By such examination we are coming gradually to restrict more and more the number of cases of true, essential or idiopathic epilepsy, in which the pathology and morbid anatomy are still obscure. Our first effort is to exclude an organic cause, such as trauma, tumor, and old meningeal hemorrhage. It is surprising to observe in how many cases of apparently idiopathic epilepsy symptoms of old meningeal hemorrhage will be found (congenital or acquired in infancy), varying from idiocy or paralysis, or both, to the merest vestiges of monoplegias or hemiplegias, hemianopsia, imbecility, and the like. Then toxic conditions must be excluded, such as autotoxæmia, alcoholism, and so on, after which we seek for causes of the so-called reflex epilepsy in the genital, nasal, dental, ocular, and gastro-intestinal organs, and in old cicatrices. Nevertheless, after the most searching investigation, we shall find in the vast majority of cases of epilepsy no cause whatever. Traumatic cases are rare. Toxic blood states are not at all common. Reflex epilepsy is the most infrequent of all. In fact, among a thousand cases the author believes that he has not seen one of real reflex epilepsy. As to treatment, the author refers to a few new drugs, intentionally passing by those whose use is well-known. Simulo is the first of these, the tincture of which is given in doses of one to two or three drachms three times

daily. The author believes that simulo deserves a trial in most cases; that it is perfectly harmless, which cannot be said of several other drugs; that in a few cases it has been extremely beneficial in his hands.

*Solanum carolinensis*, or horse nettle, a recently proposed remedy, has in his experience proved of no value whatever. The so-called opium-bromide treatment is of great use for many patients, especially in old and obstinate cases. This treatment consists of the administration of opium for some six weeks, beginning with one-half to one grain three times daily, and increasing daily till ten to fifteen grains a day are taken, when the use of opium is suddenly stopped, and bromides in large and gradually reduced doses are given (thirty grains four times daily to begin with). He has used in certain cases of epilepsy for some years codeine with considerable success, but this combination of the opiate with bromides is still more satisfactory.

*Adonis vernalis* conjoined with the bromides, as recently suggested by Bechterew, is an efficient method of treatment, from which in several instances he has had gratifying results. *Digitalis*, which has properties similar to *Adonis vernalis*, was formerly frequently given in epilepsy, but the new combination seems to be much more efficacious.

There are a few cases of epilepsy in which careful investigation indicates self-intoxication as a factor. In these an excess of ethereal sulphates (indican) in the urine, together with periodical or constant attacks of gaseous diarrhœa, are almost positive manifestations of putrefactive or fermentative changes taking place in the alimentary tract. It is remarkable how much benefit may be obtained in such patients by the regulation of the diet—milk and its modifications, kumyss, matzoon, somal, rare or raw beef, eggs, green vegetables, and special breadstuffs, like zwieback.

**Kiernan, James G.: Epileptic Insanity.** (*American Journal of Insanity.* 1896. Vol. lii., No. 4.)

The relations of epilepsy to insanity are by no means simple. Epilepsy may be merely a complication, or a sequel, or a preliminary to recovery, in certain psychoses. None of these cases, however, belong to the true epileptic alienations. Epilepsy produces these psychoses, and they are essentially epileptic at bot-



tom. Two broad types of epilepsy are usually recognized—the epileptic mania and the epileptic dementia—but outside of these occur numerous mental manifestations, which are exceedingly important from a medico-legal standpoint.

Krafft-Ebing divides the mental manifestations arising from epilepsy into: The psychical degenerations (epileptic dementia); the transitory epileptic psychic disturbance (preceding, following, or replacing convulsions), further divided into: (1) Epileptic stupor. (2) States of imperfect or dazed consciousness with fright (Falret's *petit mal intellectuel*); with frightful delusions and hallucinations (Falret's *grand mal intellectuel*); with expansive religious delusive conceptions; with dreamy stupor; with dreamy stupor followed by rapid flights of ideas; the epileptic psychoses which stimulate ordinary types of insanity, but present certain symptomatic peculiarities, and have an epileptic basis.

Spitzka makes the following division, valuable for clinical purposes: First, the epileptic psychic equivalent, which replaces the epileptic convulsions. Second, the acute post-epileptic insanity, which almost immediately follows the convulsive attack (the ordinary post-epileptic stupor being included as part of the convulsion), or the psychic equivalent of such a convulsive attack. Third, the pre-epileptic insanity, which precedes the outbreak of the convulsive attack, or its equivalent, and increases up to the amount when the paroxysm explodes. Fourth, the purely intervallary epileptic insanity, which, neither immediately following nor preceding a paroxysm, occurs in the interval between the convulsions. Fifth, epileptic dementia, which may complicate any of these psychoses, and render their diagnosis, when occurring in old cases, difficult.

The masked epilepsy of English writers according to Morel is marked by the following symptoms: The invasion of these attacks is sudden. There is always loss of memory of them. The acts done in them are instantaneous and of an exceptional violence. Hallucinations, when present, are always terrifying, and at every attack the same phenomena presents itself. Morel says: "The masked epilepsy condition presents peculiar symptoms, among which may be found at the onset excessive instability and mobility of character. Later, transformation of delirium reproduce themselves in a true periodicity."

In Kiernan's own observation, so-called masked epilepsy



seems the purest form of epileptic psychic equivalent. There are then, based on chronology, five varieties of mental alienation due to epilepsy—the pre-epileptic insanity, the psychic equivalent, the post-epileptic insanity, the intervallary insanity, and epileptic dementia. Epilepsy produces about  $4\frac{1}{2}$  per cent. of the hospital cases of insanity. Regarding the frequency of the various forms it may be said that epileptic dementia occurs most often in hospitals.

Magnan and Delasiauve find that in epileptic dementia, varying with the gravity of the mental condition, the attention is enfeebled and dull; memory confused, untrustworthy, and at times entirely lost; conceptions are obscure, abortive, or false; following a train of thought is painful, incorrectly done, and at times impossible; the imagination is not markedly developed. From this intellectual mutilation results mental enfeeblement.

**Fischl and Wunschheim: Protective Substances in the Blood of New-born Infants.** (*Zeitschrift für Heilkunde.* 1895. B. xvi. *University Medical Magazine.* 1896. Vol. viii., No. 7.)

The authors summarize an interesting and exhaustive investigation upon the protection afforded infants against specific diseases by antitoxic substances normally present in their blood, as follows:

1. The blood-serum of the new-born infant exerts no bactericidal influence upon the diphtheria bacillus.
2. The blood-serum of the new-born infant does not attenuate the virulence of diphtheria bacilli exposed to its action.
3. The blood-serum of the new-born is capable of preventing, in the great majority of cases, by separate injections of diphtheria cultures and the serum in corresponding doses, death from diphtheria in susceptible animals.
4. The blood-serum of the new-born is also capable of protecting, by separate injections of proper doses, guinea-pigs against the diphtheria toxine.
5. By ascending doses of serum the convalescence from the effects of infection and intoxication is increased in percentage and shortened in time.
6. Direct mixture of the toxine and serum in a glass and its injection under the skin of the abdomen of guinea-pigs produces no symptoms of disease in certain cases, but in the greater number of such experiments the animals die with typical appearances of intoxication.

7. Whether the result just described depends upon the irregularity of action of mixtures of the serum and toxine, or upon other accidental or unknown conditions, future experiments must show.

8. The greatest protective strength of the blood-serum of the new-born infant is the same as Wassermann found for the adult (one-twentieth normal unit per cubic centimetre), and the frequency of the occurrence of protective substances in the blood of the new-born is in the same ratio as that found by Wassermann for the adult.

9. That the protection manifested by the serum is not a *general peculiarity* of the serum is shown by the negative experiments in which the same quantities of serum were used.

10. In what manner the activity of the serum manifests itself in the animal body the present status of knowledge upon immunity is not in condition to answer.

**Homan, George: The Relation of Croup and Diphtheria.**  
(*Medical Mirror.* 1896. Vol. vii., No. 3.)

The author undertakes to show the relationship existing between these two diseases by a study of the statistics obtained from the record of the Health Department of St. Louis. As such records are based upon diagnoses more or less inexact, the conclusions reached cannot be considered as accurate as those derived from bacteriological research. The following table, however, presents a number of facts of decided interest. It may be of some interest to note the total mortality figures of both croup and diphtheria for the last twenty-nine years, as shown by the health department records. These returns begin with 1867, and the totals respectively are, croup 2,858, diphtheria 7,457, a ratio of one to two and three-fifths for the entire period; the average number of croup deaths per year was 98, while those from diphtheria numbered 256.

Deaths in	1886:	Croup, 160,	Diphtheria, 719,	A ratio of about 1 to 4.5
" "	1887:	" 185,	" 927,	" " 1 to 5.
" "	1888:	" 167,	" 564,	" " 1 to 3.33
" "	1889:	" 94,	" 345,	" " 1 to 3.66
" "	1890:	" 58,	" 185,	" " 1 to 3.16
" "	1891:	" 90,	" 249,	" " 1 to 2.33
" "	1892:	" 91,	" 208,	" " 1 to 2.33
" "	1893:	" 144,	" 242,	" " 1 to 1.66
" "	1894:	" 139,	" 238,	" " 1 to 1.66
" "	1895:	" 173,	" 522,	" " 1 to 3.

**Swasey, Edward: Brain Complications of Ear Disease.**  
(*Boston Medical and Surgical Journal.* Vol. cxxxiv., No. 15.)

The brain complications of chronic suppurative otitis media are of three kinds:

- (1) Abscess.
- (2) Meningitis (usually suppurative).
- (3) Thrombosis of the lateral sinus.

Regarding *abscess*, there may be one or more, and variously located, but most commonly a single abscess. It may be found between the bone and dura mater. It may be circumscribed between the dura and the brain substance. It may be just within the brain substance; or, lastly, it may be deeply located in the white substance of the brain. These various locations may be directly connected by a carious bone or pus channel with the original pus pocket, the suppurating ear, or those deeper in the cerebral substance may be shut off from this fountain source.

The term, *chronic suppurative inflammation of the middle ear*, is used because any of these three conditions almost never come from a virgin case of acute middle ear trouble. There has been a history of more or less protracted otorrhea, with, perhaps, seasons of quiescence. In such a case some exposure will light up again the fire which has almost, or quite, smoldered to embers; and once started, it will burn, and extend, and stop not until the patient's life is sacrificed.

There is another rule that holds good in the great majority of these cerebral cases; that is, the mastoid has been involved more or less severely prior to the brain symptoms. But this is not essential, for necrosis may occur in the thin bone that forms the roof of the middle ear, the attic of the tympanum, so-called, and pus gain access to the cranial cavity through this channel, or the veins and the foramina of the nerve and lymphatics may be the means of letting pus in.

Once the mastoid has become involved, several results may follow: First, the inflammation may subside and a cure follow; second, it may increase and extend, and the cellular structure become filled with pus, which may find exit in several directions. It may necrose through the anterior wall of the antrum and discharge at the upper and posterior wall of the external auditory canal. It may go through the foramina of the outer

table of the mastoid, setting up periostitis and abscess of the mastoid. It may go through the inner table of the mastoid at its lowest point, and here entering the groove of the digastric muscle, it will gravitate and spread between and around the muscles of that side of the neck, giving us a case of so-called Bezold's perforation. Or, lastly, it may find the least resistance upwards, and going in that direction either by a necrosis or by the avenue of the veins, nerves and foramina, gain access to the cranial cavity, or going inward involve the lateral sinus. And it is these two lateral events—upwards to the brain and inwards to the sinus—that lead to the subject proper of the paper.

The desperate condition of these patients is clearly evident, and without the intervention of surgical aid the case is almost hopeless. Much careful study and clinical record have been bestowed upon these cases in the past ten years, and especially so in the past three or four years. Much remains obscure regarding differentiation and localization, and probably always will remain obscure.

We may have only meningeal irritation, and symptoms of this are marked in a great number of cases of middle-ear disease. These symptoms are transient headache, nausea, vomiting, dizziness, a possible moderate rise in temperature, and accelerated pulse. But these symptoms soon improve on the free discharge from the ear of the imprisoned secretions, and these cases almost all recover, only a few exceptional cases of a fatal termination being on record.

But contrast this picture with a case of true and real meningitis in which we have persistent and distressing headache, unrelieved by any treatment to the ear, or by any medicines we may administer. The patient is hyperesthetic in his whole being; noises distress him; the light hurts him, and must be excluded or tempered; the face is flushed; the temperature is high and remains high; the pulse is rapid and continues rapid and perhaps intermittent; the pupils are contracted; the neck painful and rigid. There is nausea and vomiting; local spasms, such as trismus and stabismus, are common; and as the case progresses convulsions and coma, and then the dilated pupils tell us that the end is not far off. The rapid onset and progress of these symptoms mark the case as one of unmistakable meningitis.



**Mental and Physical Conditions of Childhood, with Recommendations as to Education and Training.** (*British Medical Journal.* 1896. No. 1841.)

In this report we have an account of the work done under the auspices of several co-operating though independent committees in investigating the condition of 100,000 school children, 50,000 of whom were seen in 1888-91 and the rest in 1892-94. To the Section of Psychology of the British Medical Association (during the annual meeting of 1888) belongs the credit of inaugurating the work, for the prosecution of which considerable sums have since been voted by the Scientific Grants Committee. In the preparation of the report, Dr. Francis Warner has had the advantage of both medical and actuarial colleagues who have assisted in conducting the inquiry and tabulating results; and the volume, with its thirty appended statistical tables, represents a vast amount of labor on the part of all concerned.

The methods of observation and research are set forth in Chapter II., the mode of procedure in examining a school being fully described. The defective conditions observed are grouped into four main divisions, namely: (1) defects in development; (2) abnormal nerve signs; (3) low nutrition; (4) mental dullness (particulars relating to the last named being derived from the teachers). The co-relations of the various classes of defect are traced out, and it is argued that the connecting link between defects of body and defective mental action is the coincident defect of brain, which may be known by observation of abnormal nerve signs. For the medical man, the observation that where faulty development exists there is also liability to malnutrition, is of practical interest, and we note that in poor-law resident schools, the proportion of children with "nerve signs" is unusually high.

From the statistical tables we glean the following: Of 100,000 children seen, developmental defects (alone or in combination) were noted in 9,777; abnormal nerve signs in 10,355; low nutrition in 3,522, and mental dullness in 7,391. It seems that more boys than girls have faults of development, but when such faults exist the girls tend in larger proportion to delicacy and mental dullness. Of children who appear to require special care and training, we find tabulated 1,261 out of 100,000 seen in schools, that is in the proportion of about  $1\frac{1}{4}$  per cent. It is noteworthy

that the proportion was smaller in the second half of the inquiry than in the first, probably because the class of schools seen was of a superior description.

## HYGIENE AND THERAPEUTICS.

**Belt, E. Oliver:** **Care of Children's Ears.** (*Virginia Medical Semi-monthly.* 1896. Vol. i., No. 2.)

That ordinary ear troubles are very frequently neglected and their seriousness overlooked by the busy practitioner, is shown by the great number of cases of deaf-mutism, the result of acquired and preventable deafness, and the cases of otorrhœa which come to a specialist with a history of having existed for several years. There are in the United States about 50,000 deaf-mutes, or one in 1,200 inhabitants, and the number of those suffering with impairment of hearing sufficient to interfere with the routine duties of life would, no doubt, run into the hundreds of thousands.

All cases of deaf-mutism are such from birth or are acquired before the seventh year, and a great number of the cases of impaired hearing are acquired during childhood; so the care of children's ears may well be worth serious consideration.

In the treatment of acute otitis media, relief from the ear-ache is usually the first symptom needing our attention. We have no specific for this, as the pain is from pressure of a swollen mucous membrane in the middle ear, or from pent-up pus in the same cavity, and cannot be cured until this pressure is relieved.

However, hot applications and anodynes lessen the pain, and should be used. Heat may be applied by hot bran bags, water bags, or the Japanese hot box, and the solutions poured into the ear should be as warm as can be borne. Menthol, twenty grains to an ounce of olive oil, may be used, or a solution of atropia, morphia, and cocaine, about ten drops in the ear. Of course the latter should not be used after a discharge has begun, as the solution may go through the perforation into the throat and produce poisoning.

The ear should also be gently inflated by means of the Politzer air-bag, which aids in cleansing the ear and opening the Eustachian tube. Under this simple treatment nearly every case will be cured in a week or ten days, and yet Dr. MacCuen Smith

says there are annually dying in the United States probably 4,000 of her inhabitants from cerebral abscess, the result of otorrhœa.

The treatment of chronic otorrhœa is much the same as of the acute. Cleanliness is of first importance. After cleansing with antiseptic solutions, some prefer what is known as the "dry method," that is, the insufflation of boracic-acid powder, which is allowed to remain in the ear until it becomes moist, when it is washed out with one of the above solutions and replaced by fresh powder. In some of these old cases granulations and polypi are found. These usually require the attention of a specialist, but instillations of alcohol may be tried for the granulations. The polypi must be removed. Mastoid complications had better be referred to a specialist without delay.

One of the most common causes of impaired hearing is chronic non-suppurative otitis media. This is invariably the extension of a catarrhal condition of the nose and throat, and usually comes on so gradually that ear trouble may not be suspected. The child may be considered stupid and inattentive, when, in fact, it is dullness of hearing. The treatment of this trouble consists in correcting the nose and throat trouble primarily, and in medicating and inflating the middle ear.

Ceruminous deposit is a frequent cause of deafness. However, this is very readily remedied by a syringe and warm water. The ear should be washed only with warm water, and no cold application should be used in the ear.

The physician is frequently called upon to remove foreign bodies from the ear. Sweet oil or glycerine will usually kill or quiet an insect, after which it can be removed like cerumen or any other foreign body.

The general practitioner is particularly warned never to use a probe, ear spoon, or forceps in these cases, as great injury has been done with these little instruments while contending with a struggling child. Foreign bodies sometimes remain in the ears for years without doing injury, so there is no need of haste, excitement, or forcible methods in dealing with them.

**Coulter, J. H.:** *The Treatment of Quinsy.* (*Journal American Medical Association.* 1896. Vol. xxvi., No. 19.)

In any suggestions as to abortive measures, the fact must be remembered that we do not usually see a quinsy patient until

the disease has been progressing for twenty-four or more hours. To abort it is out of the question, in almost any case. We cannot claim for any medicinal remedy or combination a positive abortive effect. In every case it is advisable to give a good mercurial cathartic, followed by a saline. Unless we are reasonably positive of the presence of pus, the use of the knife is not advisable. We must not provoke the inflammatory action by a too hasty attempt to relieve our patient by incision.

For many years the stereotyped line of prescribing was quinine, opium, guaiacum, sodium salicylate, aconite and belladonna, either singly or in compound, as the opinion of the prescriber was guided by experience. More recently salol has been extensively used, and has proved more satisfactory than the older treatment. More recently the author has used lactophenin in twelve cases of quinsy, and in all but one instance the results have been most gratifying. These patients have been first seen in all stages of the disease, from the first hour of the attack to the fourth day; and in one case, in consultation, on the sixth day.

The average time of relief he reports to have been about four hours. In all but three the relief was decided before the knife was used. In each of these three there were evidences of pus present, and the bistoury was used at once; so that the part played by the remedy was indeterminate.

He gave the lactophenin to the exclusion of every other remedy internally, excepting the cathartic already referred to; not omitting, however, the usual hot gargles and external applications. His reasons for preferring it are: Its action is more prompt; it has thus far given no undesirable after effects; it not only relieves the pain, but reduces the fever with an equal certainty. In cases of evident rheumatic diathesis he would employ, in addition thereto, the customary remedies.



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## Original Communications.

### ON THE TREATMENT OF ECZEMA IN CHILDREN.

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In requesting me to write briefly on this subject, the editor has made certain suggestions as to the line of thought to be followed, as most suggestive and valuable to the general practitioner. The matter will therefore be arranged under the heads or questions which he has proposed.

1. "*Does it ever do harm to cure an eczema?*" In answer to this I may say that in my practice of over twenty-five years I cannot recall a case where harm resulted from the proper treatment of an infantile or other eczema. Among 10,000 miscellaneous skin cases in my private practice, recently analyzed, there were 3,201 of eczema, and of these 375 were under five years of age. Many of these cases have been watched for years, and are only improved in health by the proper cure of the eczema.

2. "*To what extent should constitutional treatment be relied on?*" Constitutional treatment, including diet and hygiene, is the main reliance as to the cure of a large proportion of the cases of eczema in young children. While in a certain small proportion the eruption may be almost wholly local in nature and origin, and yield to local measures, and then remain absent, in the larger proportion it will tend to crop out again and again unless proper constitutional measures are taken.

3. "*Is eczema the result of a diathesis?*" This was the opinion of many dermatologists some years ago, but at the present time it is difficult to define scientifically in what a "diathesis" consists, and I think that very few now hold to any fixed diathesis as a cause of the eruption.

4. "*What are the predisposing causes?*" Primarily, debility of tissue, which may be either hereditary or acquired: secondarily, very many internal and external conditions which lead to faulty action of the deeper layers of the skin. The internal causes may be

classed under 1, Dietetic; 2, Assimilative; 3, Neurotic; and the external under 1, Climatic; 2, Hygienic. The limits of this article forbid any full discussion of these topics (which might be very extended) or of the consideration of the various *exciting* causes of eczema. But a brief explanation may be offered of some points relating thereto. Local irritants, however severe, are incapable of exciting true eczema, except in those so predisposed: a dermatitis or superficial inflammation may be excited, presenting many of the characteristics of the eruption under consideration, but it is quite different in its tendency to speedy recovery, when once the local cause is fully removed and the surface adequately protected.

A most striking illustration of the difference may be seen in scabies, where, in the large majority of cases, the eruption, however severe it may have been made by scratching, will cease with the proper local treatment of the parasitic disease; but in a few cases the local irritation thus set up will not so subside, but will continue and spread, exhibiting pronounced features of true eczema. The distinction should be clearly made between a local dermatitis (from very many causes) and real eczema; if this were always done the proportion of eczema cases would be smaller.

5. "*To what extent does it depend on diet?*" To a very large extent. By this is not meant that any one or many articles of food may or can produce the tendency to eczema: but it does mean that faulty nutrition of the tissues, largely due to dietary errors, plays a very considerable part in the production of eczema. Other things being right, that is, the functions being all well performed, etc., with a perfectly correct or ideal diet and nutrition, the skin tends to be perfectly formed, and does not tend to take on a catarrhal tendency under local, or even internal irritation. But with an imperfectly nourished skin this readily takes place, especially in those with an inherited or constitutional tendency to the same.

6. "*To what extent is diet to be relied upon in treatment?*" Very largely, in conjunction with proper internal and external therapeutics. Not only are articles known to be indigestible or to excite cutaneous irritation to be avoided, but all diet having a tendency to induce depraved nutrition is to be excluded; there is therefore, to be instituted *such a regulation of the quantity and quality of the food and drink taken, its mode of preparation, and*

*time and method of consumption, as shall conduce to the restoration and maintenance of health.* In this larger definition of diet all who see much of eczema in young persons (and old as well) must agree that it is an important factor in the proper management of the disease.

7. "*Is eczema ever reflex—particularly in regard to the teeth?*" Most assuredly, as far as relates to separate attacks or outbursts of the eruption; as may often be witnessed on each accession of a tooth, in those subject to the same. But as to causing the disease, it is impossible that the physiological process of extrusion of the teeth can have any real effect in inducing the skin to take on true eczematous action, when previously healthy.

8. "*Outline of treatment.*" Only the briefest suggestions are possible within the limits of this article. The measures employed must vary very greatly according to the age of the patient, the susceptibility of the skin, the stage, degree, and extent of the eruption, and the physical condition of the patient; no two cases of eczema of any severity or duration can or should be treated exactly alike. Every little patient with any amount of eczema should be studied even more carefully than one with acute disease: for instinct and experience will often enable one to judge quickly in the latter case, whereas an obstinate case of eczema will often test the very best powers and acumen of the physician, to discover and reach the element at fault in the case.

While eczema in children, as well as in adults, is often directly dependent upon faulty metabolism, and disordered action of some of the emunctory organs, it must ever be remembered that it is a disease of lowered vitality; thus, while remedies and measures are taken to promote excretion and assist assimilation, the tonic idea should pervade all treatment. On the other hand, too stimulating measures, dietetic or medicinal, may fail of action or even do harm when used too early or pushed too vigorously.

Mild laxatives are certainly of great advantage, both at the beginning and during treatment, also remedies which promote the action of the kidneys, both as to solid and liquid ingredients.

While arsenic sometimes seems to have a wonderfully controlling action over eczema in young children, when pushed to full dosage, in many instances it fails; and practically arsenic does not form a large element in treatment by those who have most experience with the disease.

Local measures must vary so greatly according to the stage



and condition of the eruption, and also with the peculiarities of individual skins, that it is impossible to give briefly any indications as to their use. It may be stated, however, that the error most commonly committed is on the side of too strong and irritating applications. It should always be remembered that the eczematous skin is itself in an irritable condition, with nature seeking to give relief to the irritation by an exudation from the congested blood vessels and cells. Further, that this erethetic condition is apt to be continually aggravated by the efforts of the patient to get relief by scratching. This scratching or rubbing attracts more blood to the part, and by laceration injures the deeper layers of the skin, which should be protected by an external, horny layer, which is more or less wanting.

Protection and soothing is therefore what the excited skin wants, and yet what it is often very difficult to secure. The complaints or evidences of the itching will often cause the physician to use stronger and stronger applications, hoping to control it, and they will only too often prove more and more irritant to the delicate and excited cells, and really aggravate the inflammation and itching, instead of subduing it. The reason of the well-known popularity of the oxide of zinc ointment is because of its bland and non-irritating character, when well prepared, forming a protective coating over the inflamed part: subnitrate of bismuth acts in the same manner, and is rather more astringent.

It would be impossible to give here any outline of just the methods to be followed in individual conditions of eczema, many of which are clearly stated in the text-books; but it may be well to utter a caution against trying continually many of the new things which are so assiduously foisted upon the medical, and lay public. It is far better to have a few good remedies or combinations and to use them over and over again, and become familiar with their powers and limitations, than to try new remedies with each new case. I would also urge yet once more the great importance and value of keeping careful notes, especially of skin cases, as they are most serviceable, both in following the changing phases of the disease and the necessary changes in treatment, and also for future reference in similar cases.



# A CLINICAL REPORT ON THE CHEMICAL EXAMINATION OF TWO HUNDRED CASES OF HUMAN BREAST MILK.

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## ABNORMAL MILKS.

Under this head have been classified only those milks which have shown themselves abnormal by their effect upon the child, or have been found by chemical analysis to differ materially from average milk. Chemical analysis alone, however, offers no criterion, for in many cases, as has been previously stated, the infant adapts itself to its conditions, and thrives on a milk which one should suppose ill adapted for food.

To secure a healthy milk, the mother should have:

- (1) A good constitution.
- (2) Healthy environment.
- (3) Simple, nutritious diet with enough albuminous food.
- (4) Regular exercise in the open air.

These, with the exception of the first mentioned, are simple hygienic conditions which every mortal should enjoy, but on a nursing woman they have a definite influence, not only on her health, but on her milk, and in this way a disregard of them is as harmful to the infant as to the mother. A woman with a wasting disease cannot yield a nutritious milk, and a woman whose general condition is below par is liable to dry up prematurely. A robust woman offers the best milk.

Under the head of environment comes a happy home life with a minimum of worry. Nervousness of any kind causes a rise of the proteids, and if the woman is constitutionally nervous, this may cause such a constant rise as to make the milk unfit for a food. A woman in our wards could not live happily with her neighbors, and frequently indulged in heated argument with

marked show of temper. After these quarrels her child was always upset for a day or two. A simple, nutritious diet, with a proper allowance of meat, is necessary, as it keeps up the general tone of the milk. The milk of an underfed woman shows a reduction in total solids. A lack of meat reduces the fats and total solids, and on the other hand, an excessive meat diet raises the fats too high.

A judicious amount of exercise in the open air is necessary, for it is a general tonic to the milk. When the milk is scanty, a little exercise often restores the proper amount; and the baby who has been crying from hunger, and lagging behind in weight, improves in a wonderful manner. A lack of exercise allows the proteids to increase. On the other hand, excessive exercise worries and tires out the mother, and acting like other untoward nervous influences, results in the production of too large an amount of proteids, causing the same result as if exercise had been neglected.

Each one of these conditions, if nicely regulated, is a source of good; on the other hand, their abuse or neglect is sure to result only in injury. Moreover, the regulation of these conditions varies according to the idiosyncrasy of different women, and in each case it must be determined just how much of each is required. In some cases it is only by repeated examinations of the milk and rearrangement of the manner of life that a satisfactory condition is reached.

#### EXCESSIVE FATS.

In judging from the chemical analysis alone, without regard to the effect of the milk upon the child, we should often wrongly judge the fats to be in excess, as we have already stated that this constituent is subject to great variation, and that an unduly large amount may occur at any period of lactation; there is no particular time when this condition is to be expected. A large amount of fat may tax the digestive system too severely, and is often followed by spitting up after nursing, vomiting, or by intestinal symptoms. Such disturbances, if allowed to persist, are naturally followed by lack of nutrition and a loss of weight, which must receive treatment. This consists mainly in cutting down the amount of albumen in the mother's diet, until the per cent. of fat in the milk agrees with the child; but should this be carried too far, it results in a general impoverishment of the milk in all

its solids, with a reduction of the total solids, so that although we have corrected the excess of fats, the nourishing properties of the milk are impaired, and the nursing infant loses weight from partial starvation.

A deficiency of fat never causes any intestinal symptoms that we have been able to determine. It is generally considered that a deficiency of fat causes constipation, but this we have not proved. Constipation has more often seemed to be due to an insufficiency of milk, or an insufficiency of total solids, so that not enough is left to pass through the alimentary canal as waste material.

A fine child, doing nicely, continued to gain, and kept above normal weight till three months of age. The character of the milk is shown by the accompanying analysis. Mother, 27 years; grav. ij.; healthy; good supply. Infant, male; birth weight, 6 lbs. 9 oz. (2970 grammes); when 29 days old, weight 10 lbs. 8 oz. (4761 grammes).

	Spec. grav. 1.033.
Fat, . . . . .	1.85
Carbohydrates, . . . . .	6.90
Proteids, . . . . .	1.34
Salts, . . . . .	.25
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Total Solids, . . . . .	10.36
Water, . . . . .	89.63

At three months the infant began to vomit, have green movements, and to cry with colic. Still he continued to gain weight, though more slowly than normal, until the fifth month, when it was found that his weight was beginning to fall off. He continued to vomit and cry, while the bowels were in worse condition. He seemed really sick.

Analysis at five months:

	Spec. grav. 1.022.
Fat, . . . . .	8.44
Carbohydrates, . . . . .	6.15
Proteids, . . . . .	.91
Salts, . . . . .	.17
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Total Solids, . . . . .	15.69
Water, . . . . .	84.30

The analysis of the milk explained the source of trouble. There was a decided change from the milk we had analyzed on the twenty-ninth day. Then the fats were but 1.85 per cent., but now they had run up to 8.44 per cent. This quantity of fat is so very unusual and excessive that there was no hesitation in blaming it for the child's condition, and steps were immediately taken to correct it.

First of all, as a general regulator, the mother was told to take a walk in the fresh air every day, and to stop eating meat and eggs altogether. Two days later the milk showed a marked improvement in the baby, and four days later the fat had fallen to 3.40 per cent., the specific gravity to 1.029. There was no more vomiting, and the movements were yellow and well digested. This proved that our treatment had been well directed. The child, however, continued to lose weight and to cry, although he had no gastro-intestinal symptoms or physical signs of disease. Three weeks after the last analysis another examination was made, which showed the following result.

Analysis at five months, twenty-two days:

	Spec. grav. 1.031.
Fat, . . . . .	1.66
Carbohydrates, . . . . .	7.25
Proteids, . . . . .	.61
Salts, . . . . .	.19
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Total Solids, . . . . .	9.72
Water, . . . . .	90.27

We now found that, through a misunderstanding, the mother had continued to desist from albuminous diet completely. As a result, although the child had no intestinal symptoms, he did not receive enough nourishment, and consequently did not begin to gain weight normally until this mistake had been rectified. This case demonstrates how an excess of fat may be corrected, and how the treatment must be used properly, and not carried too far.

Rotch, of Boston, has said that the amount of fat in the milk can be controlled by the amount of nitrogenous material in the mother's diet. The treatment in the following cases was not indicated, but was prescribed to prove or disprove his statement.



Mother, 19 years; grav. ij.; healthy; good supply. Infant, female; birth weight, 7 lbs. 9 oz. (3430 grammes); 6 days old, weight, 6 lbs. (2734 grammes).

Analysis at six days:

	Spec. grav. 1.033.
Fat, . . . . .	2.33
Carbohydrates, . . . . .	6.49
Proteids, . . . . .	1.23
Salts, . . . . .	.24
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Total Solids, . . . . .	10.31
Water, . . . . .	89.68

The infant cried a great deal, vomited, and had green and undigested movements. The milk did not suggest anything out of the ordinary, but to determine if we could increase the amount of fat at will, the mother was put upon an albuminous diet of eggs for breakfast, meat for dinner and supper, and meat broth between times. The vegetables were limited. The child's condition remained about the same, and in two days the fats had increased to 4.20 per cent., and the specific gravity had fallen to 1.029. For six days this diet was kept up. The infant still cried a great deal at night, and the movements continued green, although the weight increased. The milk was analyzed on the twelfth day, and showed the fat still high.

Analysis at twelve days:

	Spec. grav. 1.027.
Fat, . . . . .	4.57
Carbohydrates, . . . . .	6.00
Proteids, . . . . .	1.77
Salts, . . . . .	.23
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Total Solids, . . . . .	12.59
Water, . . . . .	87.40

The diet was then discontinued, and one lacking in albumen-oids was substituted. After twelve days, a third analysis was made.

## Analysis at twenty-four days:

	Spec. grav. 1.029.
Fat, . . . . .	3.77
Carbohydrates, . . . . .	6.89
Proteids, . . . . .	2.69
Salts, . . . . .	.20
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Total Solids, . . . . .	13.56
Water, . . . . .	86.43

The child was now in good condition—healthy, above weight, and sleeping well—while the fat had fallen as we had desired. The fat had increased and diminished as we had anticipated with the administration and withdrawal of the meaty diet respectively.

Another case demonstrates the same point.

Mother, 20 years of age; grav. ij.; healthy; abundant supply. Infant, male; birth weight, 6 lbs. 12 oz. (3070 grammes); 21 days old, weight, 8 lbs. 10 oz. (3911 grammes).

## Analysis at twenty-one days:

	Spec. grav. 1.030.
Fat, . . . . .	6.61
Carbohydrates, . . . . .	6.20
Proteids, . . . . .	.94
Salts, . . . . .	.19
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Total Solids, . . . . .	13.96
Water, . . . . .	86.03

Two days after this analysis was made the mother was put on albuminous diet to see if the fat could be kept in excess. When twenty-seven days of age, or four days after the change of diet, another analysis was made.

## Analysis at twenty-seven days:

	Spec. grav. 1.023.
Fat, . . . . .	5.21
Carbohydrates, . . . . .	5.35
Proteids, . . . . .	1.81
Salts, . . . . .	.28
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Total Solids, . . . . .	12.66
Water, . . . . .	87.32

This shows the fat in excess, although it had fallen some, but changing to non-albuminous diet, a marked difference was noted; in six days the fats had fallen to 2.56 per cent.

Analysis at one month, four days:

	Spec. grav. 1.031.
Fat, . . . . .	2.56
Carbohydrates, . . . . .	6.83
Proteids, . . . . .	1.57
Salts, . . . . .	.17
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Total Solids, . . . . .	11.14
Water, . . . . .	88.85

#### EXCESSIVE PROTEIDS.

The proteids are apt to be excessive under certain conditions. These conditions are a lack of exercise, too rich a diet, and nervousness. Excessive proteids occur frequently during the first days of lactation. When excessive, they show themselves by interfering with the infant's digestion, the symptoms of which are vomiting and frequent movements of the bowels, which may contain curds of undigested proteid. The movements are sometimes green and sometimes yellow, the green movements being more frequent during the first days of nursing. The baby suffers from colic, and on account of the disturbance of the digestive organs, there may be a disturbance of nutrition sufficient to cause a loss of weight. We shall consider the treatment of this condition during the first days of lactation later, but for the present will speak of the treatment in general.

The treatment of this condition is both prophylactic and curative. Its most constant cause is lack of exercise. A woman of sedentary habits, especially if her diet is too rich, should be advised to take a suitable amount of exercise, regulation of this function being the most reliable factor in reducing the proteids. By drinking a larger amount of water, the mother can dilute her milk so that the total solids, and consequently the proteids, will be represented by a smaller per cent., or the milk may be pumped and diluted with water directly, when it can be fed from the bottle.

Mother, 29 years; grav. ij.; healthy; good supply. Infant, female; birth weight, 5 lbs. 8 oz. (2500 grammes); at 3 months of age, weight, 12 lbs. 4 oz. (5556 grammes).

## Analysis at three months:

	Spec. grav. 1.034.
Fat, . . . . .	1.38
Carbohydrates, . . . . .	7.19
Proteids, . . . . .	2.72
Salts, . . . . .	.16
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Total Solids, . . . . .	11.43
Water, . . . . .	88.55

For ten days the infant had frequent yellow and undigested stools. There had been no vomiting, but the child cried a great deal with colic. The foster-child was in the same condition. This case shows, both in the case of the mother's child and the foster-child, the usual results of a milk with high proteids.

The next case demonstrates some principles in the treatment of excessive proteids, which Rotch has shown consists in regulation of the exercise.

Mother, 23 years; grav. i.; nervous constitution; poor general condition; good supply of milk. Infant 1 month premature, and under weight at birth, but at 1 month, 7 days of age it weighed 6 lbs. (2721 grammes).

## Analysis at one month, seven days:

	Spec. grav. 1.035.
Fat, . . . . .	4.13
Carbohydrates, . . . . .	6.79
Proteids, . . . . .	2.06
Salts, . . . . .	.26
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Total Solids, . . . . .	13.23
Water, . . . . .	86.76

The infant had been having five or six green movements with curds every day since birth. The mother had taken no exercise, was losing sleep, and was very nervous. This case showed high proteids, as we shall find later is the case in prematurity. The mother was in such poor condition, it was feared that exercise would be an injury rather than a help. Still fresh air was necessary, and driving each day was recommended. She was advised to eat meat but once a day, instead of three times, and to drink large quantities of water.



Six days after the inauguration of the treatment, the child, though much improved, still suffered from indigestion. Movements were frequent, but the curds had diminished to small flakes. Child had gained six ounces in the four days. This improvement in the stools was due to the diminution of the proteids, as seen in the following analysis.

Analysis at one month, thirteen days:

	Spec. grav. 1.031.
Fat, . . . . .	4.38
Carbohydrates, . . . . .	7.10
Proteids, . . . . .	1.66
Salts, . . . . .	.24
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Total Solids, . . . . .	13.37
Water, . . . . .	86.62

During the following week the movements became less frequent, and there was a gain of one ounce daily. One month after the beginning of treatment the movements still contained a few fine curds, but were reduced in frequency to the normal number, while the child's weight had increased two pounds, twelve ounces.

#### EXCESSIVE PROTEIDS DURING THE COLOSTRUM PERIOD.

In normal cases we have found the proteids highest during the colostrum period. This excess influences the color of the stools. After the four days during which the infant is passing meconium, the stools become brown or brownish green. After this the color of the stools may change to the yellow of a normal infant's stool, or it may continue green, or green alternating with yellow, for several days. In an older child such a green color of the stools often indicates an excess of proteids in the milk, which requires treatment. In the stools of infants of this age a green color so often exists that it demands no treatment, unless accompanied by other symptoms of disease. It is to be considered simply the natural consequence of the high proteids in the milk of this period. If it becomes more marked, curds appear in addition to the green color of the stools. The movements become increased in frequency, and there may be vomiting, with rise of temperature. Such a hard strain upon the new-born infant during the first days of life may change into a toxic gastro-

enteritis, with feeble, rapid pulse and cyanosis, which is difficult to differentiate from a septic condition of the system.

Mother, 24 years of age; grav. i.; healthy; good supply of milk. Infant, male; birth weight, 7 lbs. 12 oz. (3520 grammes); 4 days of age, weight, 6 lbs. 13 oz. (3100 grammes).

Fat,	.	.	.	.	.	3.12
Carbohydrates,	.	.	.	.	.	4.93
Proteids,	.	.	.	.	.	3.49
Salts,	.	.	.	.	.	.24
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Total Solids,	.	.	.	.	.	11.82
Water,	.	.	.	.	.	88.17

The high proteids in this case upset the infant, and showed in frequent green and undigested movements, uric acid stain upon the napkins, and an afternoon temperature of 103°. At the end of one week the disturbing proteids had fallen to 1.85 per cent., and after another week of no treatment the green in the stools disappeared, and the child began to improve.

Mother, 31 years; primipara; fair general condition; fair supply of milk. Infant, male; weight at birth, 8 lbs. 12 oz. (3960 grammes); five days old, weight, 7 lbs. 12 oz. (3420 grammes).

Fat,	.	.	.	.	.	2.83
Carbohydrates,	.	.	.	.	.	4.80
Proteids,	.	.	.	.	.	3.24
Salts,	.	.	.	.	.	.39
						<hr/>
Total Solids,	.	.	.	.	.	11.30
Water,	.	.	.	.	.	88.69

Fed on the milk represented in this analysis, the infant lost steadily, and had very bad movements. This general condition failed, and on the twelfth day the circulation was poor, the face dusky, and the child was in as miserable a condition as if the system were poisoned. On the twelfth day he was taken from the mother and put upon a woman's breast, whose child was older and doing nicely. The stools and general condition immediately improved, and in ten days the child had improved so much that it was hoped he could digest his own mother's milk,

even if the proteids had not become normal. This was tried. The milk was not analyzed at this time, but it apparently agreed with the child, and one month, seventeen days after delivery the child was still doing well, and the analysis showed a marked reduction in the amount of proteids.

Analysis at one month, seventeen days:

Fat,	.	.	.	.	.	4.22
Carbohydrates,	.	.	.	.	.	5.64
Proteids,	.	.	.	.	.	1.81
Salts,	.	.	.	.	.	.15
						<hr/>
Total Solids,	.	.	.	.	.	11.83
Water,	.	.	.	.	.	88.16

Any extra worry or nervousness may increase the amount of proteids during the first days of lactation. The following case illustrates this point. The infant had colic and bad movements.

Mother, 24 years; primipara; healthy; abundant supply; excessively nervous, and at times hysterical. Infant, male; weight at birth, 6 lbs. 8 oz. (2940 grammes); 7 days old, weight, 6 lbs. 5 oz. (2860 grammes).

						Spec. grav. 1.030.
Fat,	.	.	.	.	.	3.74
Carbohydrates,	.	.	.	.	.	6.09
Proteids,	.	.	.	.	.	2.15
Salts,	.	.	.	.	.	.34
						<hr/>
Total Solids,	.	.	.	.	.	12.35
Water,	.	.	.	.	.	87.64

#### PREMATURITY.

In every case of prematurity in which we have had an opportunity to analyze the milk, we have found distinguishing characteristics. The variations of the colostrum period are present, but exaggerated in the proteids. This increase in the proteids extends over a longer interval than in ordinary colostrum milk, and is not easily dispelled. It consequently taxes the delicate digestive organs of the untimely-born infant for a longer time than is usual. The sugar, the complement of the proteids, is low at this time. The cases reported were all one month premature.

## CASES ONE MONTH PREMATURE.

	2 days. Spec. grav. 1.032.	3 days. Spec. grav. —	7 days. Spec. grav. 1.031.
Fat, . . . . .	1.83	2.48	2.68
Carbohydrates, . . . . .	5.55	5.38	5.38
Proteids, . . . . .	3.18	2.91	3.08
Salts, . . . . .	.27	.23	.26
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Total Solids, . . . . .	10.83	11.04	11.42
Water, . . . . .	89.16	88.95	88.57

Analysis of the same case at successive times:

	4 days. Spec. grav. —	17 days. Spec. grav. —	1 mo., 10 days. Spec. grav. 1.030.
Fat, . . . . .	3.39	3.32	3.33
Carbohydrates, . . . . .	5.02	4.43	6.64
Proteids, . . . . .	4.90	3.88	1.71
Salts, . . . . .	.31	.26	.10
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Total Solids, . . . . .	13.66	11.91	11.79
Water, . . . . .	86.32	88.08	88.20

	5 days. Spec. grav. 1.030.	16 days. Spec. grav. 1.027.
Fat, . . . . .	2.58	3.29
Carbohydrates, . . . . .	5.99	6.09
Proteids, . . . . .	2.37	1.90
Salts, . . . . .	.27	.22
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Total Solids, . . . . .	11.20	11.47
Water, . . . . .	88.79	88.52

The last two cases, analyzed on successive days, not only demonstrate an excess of proteids during the first days, but also that in prematurity this excess shows a tendency to persist longer than usual. We have known the proteids to remain over 2 per cent. into the second month of lactation. Premature children are naturally delicate, and ill adapted to stand this extra strain so early in life.

## TREATMENT AT THE COLOSTRUM PERIOD.

The treatment of excessive proteids during the colostrum period is difficult. Naturally during child-bed the mother's diet



must be limited, and exercise upon which we ordinarily rely for reducing the proteids is impossible. The milk can be pumped, diluted with water, and fed from the bottle; or it can be diluted by the administration of large quantities of water to the mother. In some of the less severe cases, less frequent nursing will prove of benefit, taking water from the bottle in the intervals. This condition is usually temporary, and will adjust itself in a few days.

In cases of prematurity, as it is hard to say how long this difficulty will persist, it is often wise to give the infant to a wet-nurse whose milk has been demonstrated to be good by its effect upon her child and by analysis. In the meantime the mother's breast should be stimulated by pumping, so that the secretion will not dry up, but in time serve as a proper food.

We have had very good fortune in the management of premature babies in our institution. Much of our success was due to careful nursing, but recognizing the excessive proteids, the treatment was regulated accordingly, and no doubt deserves a large part of the credit.

#### ABNORMALITIES TOWARD THE END OF LACTATION.

The most marked changes in the milk in the later months of lactation are a reduction of the proteids and total solids. These seem of little importance, but are not to be lightly considered. The diminution in the proteids is the natural forerunner of the cessation of lactation, and means that the milk is deteriorating; on the other hand, if the proteids are high, lactation will probably continue for some time.

The fats, certainly, are no criterion of the condition of the milk; neither is the sugar, but a proper amount of proteids in the milk indicates its tone is good. The physiologists tell us that fats and carbohydrate can be made in the human body, but that proteids cannot be, so that they have to be taken in as such. A scanty amount of proteids then means that the nursing infant will have to get along as best it can under unfavorable conditions. We have observed many such cases, and been led to think that at this time the proteids are the backbone of the milk, and really represent its nourishing properties better than any other guide which we at present possess. This condition, forced upon the child, causes a general weakness of the constitution, which results in anæmia, fretfulness, a falling below the normal gain in

weight, delayed dentition, and proneness to gastro-enteritis. The latter symptom may not appear till some time after we have begun the tardy process of weaning. As a rule the first sign of approaching danger is a tendency to gain weight more slowly than normal. A healthy infant should gain from four to eight ounces weekly for the first six months, and from two to four ounces weekly during the second six months. If the child's weight falls below this standard for any length of time, or is stationary, or there is a positive loss, we should try to find the cause at once. It may be that the infant is getting insufficient milk. This can be determined by weighing before and after each nursing. The milk should be analyzed, and if the total solids and proteids are found low, their absence must be supplied.

#### TREATMENT OF NORMAL CASES IN THE LATER MONTHS OF LACTATION.

The hygiene of the mother's life must be carefully regulated. On account of certain deficiencies which we have seen occur normally in human milk of this period, certain additions must be made to the diet. By the seventh or eighth month the infant's pancreas is functioning so well that we can rely upon it to convert starch, and some carbohydrate, such as barley gruel, should be given in addition to the milk. On account of the lack of proteids, we must give a substitute of some form of animal food. In this way a deficiency in the mother's milk can be partially supplied.

Weaning should begin at the ninth month, and in the early stages of this process we should use a modified milk containing low proteids, taking care not to force upon the infant's digestion an amount of cow's proteids equal to or greater than that which the mother has been offering, for it is known that the proteids of cow's milk form a tough curd, which are indigestible in comparison with human proteids. The number of bottle feedings and the amount of proteids should be gradually increased. Under this treatment, even if the child continues to lose weight for a time, we can feel that the stomach is gradually becoming accustomed, and eventually will be able to digest a stronger diet. At any rate we shall have the satisfaction of keeping the child from gastro-enteritis, to which its constitution would be particularly susceptible at this time.

## MANAGEMENT OF ABNORMAL CASES IN THE LATER MONTHS OF LACTATION.

If the mother is anæmic, a tonic containing iron is indicated. Holt has shown that malt increases the total solids in human milk, and we have found its use very beneficial at this time. The form we have used has been Maltine. The mother's diet should be increased with the addition of cow's milk. A good form in which to prescribe the latter is a milk punch. Exercise in the fresh air is important. Antiseptic massage of the breast for its local stimulating effect was used on A. M. Thomas' service at the hospital. In the later months of lactation we cannot hope to bring the original tone back to the milk, but we can hope to keep it from degenerating further till the child has been weaned.

Mother, 20 years; primipara; healthy; fair supply. Infant, male; birth weight, normal; 11 months, 25 days of age, weight, 17 lbs. 4 oz. (7824 grammes).

Fat,	.	.	.	.	.	2.24
Carbohydrates,	.	.	.	.	.	6.86
Proteids,	.	.	.	.	.	.36
Salts,	.	.	.	.	.	.13
						<hr/>
Total Solids.	.	.	.	.	.	9.59
Water,	.	.	.	.	.	90.40

The infant was very anæmic, and had been losing weight for two months. This case shows the usual result of protracted nursing, but all milk does not show such degeneration, for some mothers retain their milk in its strength till much later in lactation, and in such cases nursing can be continued longer.

## MILK DEGENERATING EARLIER IN LACTATION.

Changes in the mother's milk due to preparation for the cessation of lactation may begin at any time when the mother's health is so poor as to affect the milk. Many mothers are never able to nurse their children for any length of time, as the milk dries up prematurely. Under such conditions we find the same chemical changes that would normally occur later in lactation; or this condition of the milk may persist for many months, and the infant suffer from lack of food, while the mother, perhaps

misled by her abundant supply, is at a loss to account for the failing health of her baby. Under such circumstances, a better prognosis can be given than later in lactation, for the mother may be so influenced by treatment that the milk is brought up to its standard.

Mother, 19 years; primipara; poor general condition; scant supply. Infant, male; birth weight, normal; 7 months, 6 days of age, weight, 10 lbs. (4535 grammes). Poor, delicate, anæmic child, subject to bronchitis. Has been under weight since one month of age.

Fat,	.	.	.	.	.	5.61
Carbohydrates,	.	.	.	.	.	6.89
Proteids,	.	.	.	.	.	.63
Salts,	.	.	.	.	.	.17
						<hr/>
Total Solids,	.	.	.	.	.	13.32
Water,	.	.	.	.	.	86.67

This milk showed low proteids, which often exist in a poor milk, even when the total solids are not below the normal.

Mother, 24 years; primipara; fair supply. Infant, male; birth weight, above normal; weight kept above normal till 2 months of age, and since then has gained less slowly; 4 months, 27 days of age, weight, 13 lbs. 8 oz. (6122 grammes).

						Spec. grav. 1.030.
Fat,	.	.	.	.	.	3.95
Carbohydrates,	.	.	.	.	.	7.45
Proteids,	.	.	.	.	.	.34
Salts,	.	.	.	.	.	.15
						<hr/>
Total Solids,	.	.	.	.	.	11.91
Water,	.	.	.	.	.	88.08

Mother, 35 years; grav. iv.; nursed second child for five months, when the milk dried up; nursed third child three months, when milk dried up. At this lactation had an abundant supply, but was run down. She nursed her own infant, and a foster-child beside. Own infant, female; birth weight, 8 lbs. 8 oz. (3854 grammes); 2 months, 13 days old, weight, 8 lbs. 12 oz. (3968 grammes); much under weight. The weight had been



falling off rapidly for three weeks, but the child did not seem sick, had no vomiting or bowel trouble, and on physical examination nothing was discovered but craniotabes. There were no other sign of rickets.

	Analysis at 2 mos., 13 days. Spec. grav. 1.030.	Analysis at 2 mos., 20 days. Spec. grav. 1.030.	Analysis at 2 mos., 28 days. Spec. grav. 1.026.
Fat, . . . . .	3.00	3.78	3.69
Carbohydrates, . . . . .	6.97	7.06	6.81
Proteids, . . . . .	.75	.15	1.36
Salts, . . . . .	.18	.16	.18
	<hr/>	<hr/>	<hr/>
Total Solids, . . . . .	10.90	11.15	12.06
Water, . . . . .	89.09	88.83	87.93

The chemical examination of the milk disclosed the diagnosis of this case. The proteids and total solids were low. Nothing was done for a week, and the child continued to fail.

At the end of a week another analysis was made, and the proteids had fallen very low, although the total solids had risen 25 per cent. The mother was told to walk in the fresh air every day, and given a tonic containing iron, arsenic and strychnine, a tablespoonful of Maltine three times a day, and extra milk and milk punches. At the end of eight days a decided change for the better, both in the mother's condition and in the child, took place. The child had gained fourteen ounces, and was doing nicely. The analysis showed a good milk, instead of the poor milk of eight days previous.

Mother, 22 years; primipara; thin, and very nervous; fair supply; complains of lack of appetite. Infant, birth weight, 8 lbs. 8 oz. (3854 grammes); 2 months, 16 days of age, weight, 14 lbs. (6350 grammes).

	2 mos., 16 days. Spec. grav. 1.033.	2 mos., 25 days. Spec. grav. 1.035.
Fat, . . . . .	.67	1.36
Carbohydrates, . . . . .	7.14	7.25
Proteids, . . . . .	.93	.21
Salts, . . . . .	.22	.17
	<hr/>	<hr/>
Total Solids, . . . . .	8.95	9.01
Water, . . . . .	91.04	90.98

The infant was doing well, but the analysis was made because the mother was so much worried and pulled down. From

the observation of many previous cases which had presented a similar chemical condition, it was believed that the milk was likely to dry up at no distant date.

Nine days later the milk was analyzed again, and showed further reduction in the proteids. By this time the mother thought her milk was flowing less freely, and extra modified milk was given the infant. The mother continued to worry, and five days later the breasts secreted so little milk that the baby was put entirely upon the bottle. This proved to have been wise, for in three days the breasts were entirely free from milk. Two weeks later the mother was in bed with nervous prostration.

Low proteids and total solids may persist for some time, but when their reduction is rapid, it is a warning that lactation may cease unless proper treatment is inaugurated. An insufficient diet may lower the tone of the milk, reducing the proteids and total solids, but unlike the milk preparing for the cessation of lactation, its tone is promptly restored when the diet is increased.

#### SUMMARY.

(1) Excessive fats or proteids may cause gastro-intestinal symptoms in the nursing infant.

(2) Excessive fats may be reduced by diminishing the nitrogenous elements in the mother's diet.

(3) Excessive proteids may be reduced by the proper amount of exercise.

(4) Excessive proteids are especially apt to cause gastro-intestinal symptoms during the colostrum period.

(5) The proteids, being higher during the colostrum period of premature confinement, present dangers to the untimely-born infant.

(6) Deterioration in human milk is marked by a reduction in the proteids and total solids, or in the proteids alone.

(7) This deterioration takes place normally during the later months of lactation, and unless proper additions are made to the infant's diet, is accompanied by a loss of weight, or a gain below the normal standard.

(8) When this deterioration occurs earlier, it may be the forerunner of the cessation of lactation, or well-directed treatment may improve the condition of the milk.

## A CASE OF MULTIPLE TUMOR OF THE BRAIN.\*

BY HENRY DWIGHT CHAPIN, M.D.,

Professor of Diseases of Children at the New York Post-Graduate Medical School and Hospital.

Florence L., two years and a half old, was admitted to the Babies' Wards, October 24, 1895, in a condition of mild stupor, or deep sleep.

*Family History.*—Both parents rheumatic; seven other children who had never had serious illness. There was no tubercular history in the family.

*Previous History.*—Measles was the only illness before the present attack. The child had been well up to four months ago, when she suffered from a severe attack of diarrhœa, lasting two weeks. Soon after this she grew drowsy, sleeping much of the time, and has never since shown any interest in surrounding objects. When spoken to, she nods her head, but does not reply. No vomiting and no convulsions. She takes only soft diet. Bowels inclined to constipation. The eyes are closed all the time, and it is by apparent effort that she can open them. There has never been complaint of any pain.

*Physical Examination.*—General development good; heart and abdomen negative; slight dullness on percussion at apex of left lung—otherwise negative. *Reflexes.*—Knee-jerk and ankle clonus absent. *Sensation.*—Tactile, heat and pain normal. Hearing and smell are good, and taste is apparently so. The sight is doubtful. The child can lift the eyelids but hardly enough to see. The pupils are regular and react to light, but are slightly dilated. When the child is raised, she hangs over in a limp condition, the head dropping forward or backward according to the direction in which the body is bent. When the child lies on her back, if either arm or leg is raised, it remains in that position for about half a minute, and then slowly drops. When asked where she feels sick, she puts her hand on the back of her neck. Urine normal. Temperature, 99° F.; pulse, 128; respiration, 30; weight, 16 pounds, 3 ounces.

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\* Read by title before the American Pediatric Society, Montreal, May 27, 1896.

## ABSTRACT OF CLINICAL HISTORY WHILE IN THE HOSPITAL.

October 25th. In constant stupor, but takes soft food well. She can be temporarily aroused by shaking.

October 29th. Sat up in bed to-day with body and head bent forward. She cries out occasionally as if in pain, and when raised, falls forward and screams. No stool in the past sixty hours.

November 1st. Examination of the eyes by Dr. Davis. The fundus of both eyes normal; slight paleness of disks on temporal sides, but this is not pathological; some nystagmus noted.

November 3d. Eyes still closed most of the time. Put upon iodide of potash, ten grains, every four hours, increasing one grain with every dose. Oleate of mercury, 5 per cent., half a drachm inunctions daily.

November 5th. Moderate dilatation and insensibility of pupils for the past three days; nystagmus more marked.

November 6th. Clonic spasm of left arm and fingers, lasting about a minute.

November 7th. Child seems a little less stupid to-day; moves right foot fairly well when raised, and trying to walk, but drags the left one. Oleate of mercury discontinued.

November 11th. Spinal canal aspirated between the third and fourth lumbar vertebræ, and about one drachm of clear, watery fluid withdrawn. An examination by Dr. Brooks failed to disclose any tubercle bacilli. Iodide of potash discontinued.

November 15th. No change in the child's condition since the aspiration until to-day, when a slight retraction of the muscles of the neck was noticed. She coughs occasionally.

November 17th. Child does not reply when spoken to, but nods its head.

November 19th. Takes food badly; hard to get the child to swallow. Dr. Davis examined the eyes, and found a papillitis beginning in the right eye, with swelling of the optic disk and tortuosity of the veins. Weight, 15 pounds, 7 ounces.

November 22d. Eyes show no change since the 19th. Rectal feeding is employed on account of the difficulty of swallowing.

November 23d. She will not take any food by mouth.

November 25th. A purulent discharge from the vagina noted.



November 29th. Coarse râles heard over both chests; some exophthalmos present.

December 1st. Fed by stomach tube. Weight, 13 pounds, 3 ounces.

December 3d. Pulse very weak and irregular; respiration also irregular. The child grew weaker, and died December 7th.

*Temperature.*—The temperature ranged from  $98^{\circ}$  to  $100^{\circ}$  F. up to November 26th, the evening temperature being a little higher than the morning—half to one degree. On November 26th it was  $101^{\circ}$ ; on December 2d,  $103.4^{\circ}$ ; December 2d,  $99.2^{\circ}$ ; December 4th,  $101.4^{\circ}$ ; December 6th,  $102.4^{\circ}$ .

*Pulse.*—Varied from 70 to 140.

*Respirations.*—The respirations also varied. The lowest at any time was 12, and the highest, 60 per minute. The rhythm of respiration was irregular throughout the stay in the hospital, though the number of respirations per minute averaged between 16 and 26.

*Autopsy.*—Miliary tubercles were found scattered through the lungs, and the bronchial glands were enlarged and tuberculous. The left apex was solid. The brain was carefully examined by Dr. Collins, and showed three distinct tumors about the size of walnuts, viz., (1) on the basal surface of the left cerebellar lobe; (2) at the head of the caudate nucleus on the right side; and (3) in the substance of the anterior and posterior quadrigeminal bodies. The tumor on the under surface of the cerebellum seemed to be attached only to the pia. The nature of the growths was tuberculous.

On admission to the hospital, and after examination, the diagnosis of tumor of the brain, either tubercular or syphilitic, was made, but the tumors were not localized. As noted above, no help in the diagnosis was afforded by lumbar puncture. It is extremely difficult to detect tubercle bacilli in the cerebrospinal fluid. The writer has employed lumbar puncture in a number of cases of tubercular meningitis, and an examination by a competent bacteriologist failed to discover bacilli.

## ANTITOXIN, INTUBATION, AND TRACHEOTOMY.

BY CHARLES DOUGLAS, M.D.,

Professor of Pediatrics and Clinical Medicine, Detroit College of Medicine,

In young children suffering from diphtheritic laryngeal, partial stenosis, where the necessity for quick relief demands the prompt use of antitoxin, we are confronted occasionally with a sudden increase of the dyspnœa due either to a rapid loosening of the membrane, causing occlusion of the narrow opening in the larynx, or perhaps due to that first change or swelling of the membrane caused by the antitoxin. In these cases the immediate necessity for instrumental relief, either by intubation or tracheotomy becomes imperative.

In many cases during intubation, or rather the first efforts at inserting a tube in the larynx, we loosen the false membrane and thus cause a partial occlusion, or even a complete closure of the larynx. Where a patient is much enfeebled and has been suffering from dyspnœa for many hours with well-marked cyanosis, the introduction of a tube may endanger life, through thus suddenly loosening the membrane when he has not sufficient strength to expel it, or where the increased effort necessary to do this is more than the strength of the patient can accomplish. He rapidly becomes more cyanosed, breathes less frequently, and death seems certain within a few minutes. Here the physician dare not again insert a tube, and must resort to tracheotomy,

Such a train of symptoms occurred to me in the person of Maud C. aged six years. This child had suffered previously at four and five years of age with broncho-pneumonia, the latter attack being in the spring and complicated with whooping cough. This attack lasted two months, after which she made a good recovery and at the invasion of the diphtheria she was in apparent good health. The membrane covered the tonsils, both nares, the pharynx, and finally developed in the larynx. By this time I had obtained the antitoxin and commenced the injection of it, giving her the first dose in the evening. The dyspnœa increased greatly during the night and in the morning she had great recession of the chest walls with marked cyanosis. I deemed intubation necessary and proceeded at once to do it. After inserting the tube the dyspnœa was much increased as also the cyanosis. This I ascribed to loosened membrane and obstruction of the tube. I waited a few moments to give her an

opportunity to clear the obstruction, but instead of doing so she became more cyanosed. I removed the tube but she did not improve; the breathing became slower, reflex irritability ceased and the patient was being rapidly asphyxiated. So far had the nerve centres become insensible, that she lay perfectly quiet recognizing no one, gasping slowly, and rapidly dying. I made a rapid tracheotomy, when the patient immediately revived, and a good recovery resulted. In this case I gave four injections of antitoxin, amounting in all to 3,000 units.

A few months after this case I was called in consultation to see a child eleven years old suffering from laryngeal dyspnœa of diphtheritic origin. Little membrane could be seen, but the distressing dyspnœa, cyanosis and recession of the chest walls demanded instrumental relief. I made an effort to intubate but failed to insert the tube. I must have dislodged the membrane and firmly plugged the glottis with it, as the child did not breathe again; she became blue at once and after a few struggles lay as dead. All efforts at slapping the back and compressing the ribs failed to secure even one inspiration. She showed no life except a very feeble and rapidly disappearing action of the heart. Before I could obtain a tracheotomy tube and scalpel from the next room, all action of the heart had disappeared. By making a rapid tracheotomy and using artificial respiration the patient after about two minutes began again to breathe and made a good recovery. It was very interesting to note the immediate response of the heart to the first natural inspiration. While artificial respiration secured a rush of air through the tube and a partial filling of the lungs, no appreciable result was shown on the heart by it, and no pulse appeared till after the first natural inspiration. The child made a good recovery under antitoxin.

These two cases show nothing unusual in treatment, and I report them only to illustrate the great necessity of the physician being always ready to perform tracheotomy, should he fail in successfully intubating. Had I not been so prepared, both of these cases would have succumbed immediately, and no little censure would have fallen against me. While the necessity for instrumental aid has always been present in these cases, I think as the use of antitoxin causes more rapid changes in the membrane, it thus more frequently presents sudden necessities for operative assistance.



# TUBERCULAR MENINGITIS: DIAGNOSIS BY LUMBAR PUNCTURE, WITH VERIFICATION BY INOCULATION EXPERIMENTS ON A GUINEA PIG.\*

BY HENRY HEIMAN, M.D.,

Attending Physician to the Children's Department of the Mt. Sinai Hospital Dispensary, New York.

On February 13, 1896, I was summoned to a boy thirteen months old, whose subjective symptoms were an irregular continuous fever and diarrhœa, alternating with constipation. These symptoms had existed since February 8, 1896. There were no symptoms referable to any other organ. The following facts in connection with the previous history of the boy were furnished by the mother: The boy was always well up to the day of being taken sick, and had never suffered from any of the diseases usually accompanying childhood. He was a breast baby; first tooth at six months; and was his mother's third child. The delivery, the mother recollects, had been normal in every particular; the two other children are healthy. The little patient's father died at the age of twenty-nine years of pulmonary tuberculosis, having suffered three years from the disease.

The pulse fluctuated between 140 to 150 per minute, while his respiration ranged between 30 and 40. This symptomatic complex was scarcely indicative of any one particular disease. However, on February 18, 1896, he was taken with severe general convulsions which lasted throughout the night and which continued to the day of his death, February 19, 1896. This last phase of the disease and its rapid course furnished the clue to the clinical diagnosis of *meningitis*, probably of a tubercular character. In view of the character of the disease and its rapid course, I was desirous of verifying the clinical diagnosis by an autopsy. This, however, the parent refused to sanction, but permitted me to make a lumbar puncture. The aspirator needle was passed into the canal, between the third and fourth lumbar vertebra. In this way I succeeded in withdrawing 6 to 8 c.c. of spinal fluid, which was delivered into a sterilized tube, which latter then was whirled in a centrifugal apparatus. Some of the sediment of the supernatant fluid I then examined for

\* Read before the Harlem Medical Association, November 4, 1896.



tubercle bacilli, with cover glass preparations. Altogether sixteen preparations were made, and all with negative results. I was, however, not discouraged, for I recalled that others met with similar results in their investigations of spinal fluid suspected to contain tubercle bacilli. Lenhartz,\* for example, reported twelve such experiments, with negative results.

I then preserved the spinal fluid in an incubator and at the expiration of twenty-four hours I inoculated an apparently healthy guinea pig in the right anterior upper aspect of the thigh. Six weeks later a glandular swelling was observed in the right inguinal region, otherwise there was nothing abnormal observable in the animal. On January 4, 1896, the guinea pig was chloroformed and dissected in the presence and with the kind assistance of Dr. James Ewing. A chain of about four of the inguinal glands were found to be cheesy and about the size of a pea or lentil. Cover glass preparations were made, in which tubercle bacilli were found in considerable number. As far as the organs were concerned, the spleen was enlarged, the kidneys normal, the lungs contained small tubercular nodes. Next, small portions of lung, liver, spleen, kidney, and tissue were hardened in alcohol, then mounted and examined. The glands and lungs showed tubercular giant-cells, but no tubercle bacilli were demonstrable in the tissues. The liver and spleen were normal under the microscope. The point of interest in this case, from a bacteriological standpoint was, that while the cover glass preparations did not show any tubercle bacilli in the spinal fluid, the inoculation of the guinea pig gave decidedly positive results.

In the second case of tubercular meningitis, the lumbar puncture was made *intra vitam*. This case is of special interest from a diagnostic standpoint owing to the occurrence of a mixed infection. The following facts were ascertained from the mother: P. K. female, age four years, third child, normal birth, breast and bottle fed baby (cow's milk), she had her first teeth at the sixth month, could walk and talk at the fifteenth month, had diarrhoea at seven months. I first saw the child on August 7, 1896, when I learned from the mother that she had recovered from an attack of whooping cough two months before. The symptoms present at that time were those of tubercular menin-

\* *Münchener Med. Woch.*, 1896. No. 8 S. 169.

gitis. The family history, as far as tuberculosis and syphilis were concerned, was negative. The child sustained no injury, had neither otitis media, nasal catarrh, nor defective sight at any time. I concluded at once to make a lumbar puncture, both as a diagnostic and as a therapeutic measure. I therefore in the presence of Dr. Chas. Elsberg tapped the vertebral canal on August 15, 1896, eight days after the onset of the disease. At this time the child was in a comatose condition and had convulsive twitchings, with pupils dilated. The needle entered the spinal canal between the third and fourth lumbar vertebræ and I succeeded in withdrawing  $24\frac{1}{2}$  c.c., of clear serum. It is scarcely necessary to state that in this procedure he followed the usual lines of a sepsis.

The cover glass specimens prepared from this serum showed no tubercle bacilli. Dr. Chas. Elsberg then inoculated this serum into white mice and a guinea pig. Previous to this experiment, he examined the fluid withdrawn and found the following: Fluid, clear color; neutral in reaction; albumen, 1.2 per cent.; sugar a trace; chlorides abundant, but neither sulphates nor phosphates. Cover glass preparations of the serum showed few leucocytes and a fair number of diplococci which latter did not decolorize by Gram's method. No capsule was present; cultures made on glycerin agar, serum and serum agar showed a slight growth, on potato negative result, milk coagulated in twelve hours and reacted acid. Cover glass preparations made from all the tubes gave a diplococcus not decolorized by Gram's method. The diplococcus from the serum agar tube was then inoculated into the tail of a mouse with a negative result. Two cubic centimetres of the spinal fluid was then injected into the left thigh of an apparently healthy guinea pig (weight 500 grammes); after six weeks the inguinal glands became enlarged. At the autopsy twelve weeks after the inoculation the inguinal glands were found cheesy; two small abscesses were found in the left groin and numerous miliary tubercles in the lungs and spleen. Cover glass preparations made from the cheesy glands and abscesses showed tubercle bacilli in abundance. Section of the lymph glands and of the lungs and spleen showed miliary tubercles in large number. The mixed infection Elsberg regards therefore as probably the diplococcus pneumoniae and tubercle bacillus. It is noteworthy from a clinical standpoint that the withdrawal of the slight quantity of spinal fluid was followed by

an amelioration in child's condition, as the convulsive attacks were less violent, the pupils became smaller, while the reflexes were less exaggerated. However, twelve hours after the puncture the child relapsed into its former condition. The temperature was not affected, remaining at  $101^{\circ}$  F., the pulse being 120. The child succumbed to the disease, seventy-two hours after.

220 EAST 116TH STREET.

**The Treatment of Whooping-Cough.**—In summing up, we cannot help remarking that it is quite clear that there is no known specific remedy for whooping-cough, and we shall do harm rather than good by indiscriminate drugging. The stomach is very liable to catarrh, and this catarrh may easily be made worse by drugs. One of the measures of treatment of the first importance is to place the children for the first few weeks in a well-ventilated warm room by night, changing them into another room during the day; the children being confined to their rooms, and not allowed to go out into the open air, except in summer, as long as any bronchial catarrh exists, or rhonchus can be heard in the chest. Leonhardi, and also Tobeitz, are very emphatic about this, believing there is great risk of the catarrh spreading, and pneumonia resulting, and also of the children in going out into the public parks and spreading the disease. Ullman, on the contrary, sends his whooping-cough patients out into the open air, even in winter, on suitable days, and appears to be satisfied with the result. These observations at first sight seem contradictory, but they are not necessarily so, but at any rate teach the lesson that a large amount of fresh air is of great advantage to the general health, and in strong children, who can walk briskly and maintain their circulation, involves but little risk. With babies and small children, the risk of pneumonia from exposure is much greater. There can be no question as to the advantage of change of air after six weeks.—*Medical Chronicle.*



# Clinical Memoranda.

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## A CASE OF BROMOFORM POISONING.

BY WILLIAM FITCH CHENEY, M.D.,

Adjunct to the Chair of Obstetrics and Diseases of Women and Children,  
and Chief of the Children's Clinic, Cooper Medical College,  
San Francisco, Cal.

On November 25, 1896, I prescribed for Helen F., aged a little over three years, a mixture containing bromoform for pertussis. She was to get two drops in each dose, to be given every four hours. She took the mixture regularly for a week, without any but good effects, the frequency of the paroxysms of coughing being diminished, and their violence decreased by the treatment.

On the afternoon of December 2d, about 2.30 o'clock, she was given the last dose in the bottle, not quite a teaspoonful. The mother noticed that it looked oily as she poured it out, but attributed no importance to that. The child had had her lunch about one o'clock, and ate heartily. After the medicine was taken, she went at once to the park with her nurse and spent the afternoon out of doors. On returning home about four, the child seemed perfectly well and made no complaint. She was given a lunch of bread and butter, and played about the floor for an hour or more. Suddenly, about 5.20, she complained of feeling dizzy and fell down. When picked up by the nurse she again fell to the floor as if powerless. Her head nodded about without control. She was not unconscious and could talk, but her speech was thick and unintelligible. The nurse, perceiving at once that the child was ill, picked her up and ran out with her to the nearest drug store, where Dr. D. W. Card was summoned to attend her. He says the little girl acted then like one intoxicated. She was very jolly, had much to say about her dolly in speech that was disconnected, her head wobbled about, and she laughed without cause. Soon she vomited profusely, and then became unconscious. The vomitus smelled strongly of chloroform or alcohol, and Dr. Card very naturally concluded



that the child had accidentally found in her home some bottle of medicine from which she had taken a swallow, and by which the symptoms had been produced.

The parents were not in the house at the time the little girl was taken ill, but on returning at six o'clock and finding out what had happened, they immediately telephoned me to see the case with Dr. Card. At 6.15 when I reached the patient, she was profoundly unconscious and the body perfectly limp and relaxed. The cheeks and lips had a natural rosy flush, the pupils were markedly contracted, and would not respond to light; the respirations were twenty to the minute, regular and not stertorous; the pulse was 105 and regular, but rather weak; the breath smelled strongly of chloroform. After hearing the account of the administration of the bromoform, as related in the beginning of this report, I realized that the case was simply one of an overdose of that drug, which had settled to the bottom of the bottle so that the last teaspoonful contained most of the active ingredient of the prescription.

There was no indication for treatment except emesis, which had already been accomplished, and stimulation of the heart, which was effected by a hypodermic injection of one one-hundred and twentieth of a grain of strychnine. I remained with the child, watching carefully her condition but finding no need for further treatment. She finally awoke at 8.30, sat up in bed and rubbed her eyes, asked for a drink of water, and was perfectly herself. She had slept soundly for three hours, but that was the extent of the mischief produced by her overdose of bromoform.

For the past year I have used bromoform almost exclusively in the treatment of pertussis, both in my clinic at Cooper Medical College and in private practice. I have prescribed it frequently, always in solution with alcohol, syrup and water, without any bad effects until this time. After my experience with this case, I shall in future administer the drug dropped on sugar, not in solution, for in spite of all devices it will precipitate in a mixture, so that even violent shaking of the bottle will not distribute the doses equally.

906 POLK STREET.

## Clinical Sketch.

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### POLYDACTYLISM.

Supernumerary fingers and toes are not of extreme rarity. The supernumerary digit is usually smaller than the normal one, but is occasionally of full size and strength and seems to be a continuation of the normal series. It then possesses its own tendons, and except for unsightliness is not a disadvantage.

The supernumerary finger is sometimes united with a normal one, forming a double finger. A deep bifurcation of the hand has been observed in very rare instances, there being eight fingers set in two groups with no thumb.

The most common form of polydactylism is a supernumerary finger on the ulnar border of the hand, or an additional thumb.

Malformation of the thumb may be due to bifurcation or reduplication. In the latter case the outgrowth is free at its extremity, and articulates either with the head or the shaft of the metacarpal bone, or with one of the phalanges. Its articulation sometimes communicates with the metacarpo-phalangeal joint, rendering it important to observe the strictest aseptic methods in operating. It usually contains two small phalanges. When the thumb is bifid there is one small and malformed phalanx in each extremity, articulating with the proximal phalanx. It is often difficult to determine whether the malformed thumb is reduplicated or bifid—which is the supernumerary and which the natural digit.

Supernumerary members are frequently hereditary, the same or similar deformities being seen in several members of the family. The first variety of supernumerary finger mentioned above may frequently be allowed to remain. All others should be removed in early childhood. They can be of no possible advantage, and if allowed to remain during the years of growth may cause further deformities by their presence.

The Röntgen picture on the opposite page is from the hand of a child of four years, the patient of Dr. William P. Northrup. The abnormal thumb was removed by Dr. Andrew J. McCosh at the Presbyterian Hospital in the fall of 1896. The picture in this instance was valuable in making certain the diagnosis between a true supernumerary and a bifid thumb.



RONTGEN PICTURE OF A HAND WITH A SUPERNUMERARY THUMB. REPRODUCED THROUGH  
THE COURTESY OF DR. WM. P. NORTHRUP.

# ARCHIVES OF PEDIATRICS.

DEVOTED TO THE  
DISEASES OF INFANTS AND CHILDREN.

FEBRUARY, 1897.

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## PRECOCIOUS CHILDREN.

In an article published in a recent number of the *Lancet-Clinic*, Dr. B. K. Rachford writes most wisely concerning precocious children and their management. He points out the fact that there exists a normal asymmetry between the physical and mental development of children. The nervous system of the child is normally immature and incapable of doing sustained mental work without injury. The child that deviates from this physiological condition by showing remarkable mental precocity is an abnormal child, and one that must be carefully and tactfully restrained if the best mental and physical development is to be hoped for.

This asymmetry of development is less noticeable in the lower animals than in man. The young of birds and certain animals are very precocious; they care for themselves in a few days, and reach their full development within a few weeks. As we go higher in the scale of development the young are less and less precocious. In the monkey tribe it requires from six to ten years to reach full intellectual and physical development. In certain of the African races the span of life is thirty years. The



children of these savages are very precocious; they walk very early, and reach puberty and full intellectual development at about the age of ten years.

Many negro children are phenomenally precocious, while Caucasian infants of civilized countries are, mentally, the least precocious of all creatures, requiring twenty-five years to reach full mental development. It therefore savors of reversion to a primitive type when a child develops unusual mental precocity at an early age. Such precocity may result from a number of causes, and, according to the producing causes, precocity may be divided into more or less distinct types, the recognition of which is of the greatest importance in the care and training of children.

Dr. Rachford refers particularly to two general types. In the first of these he places those precocious children of good physique, who have inherited from an intellectual parentage unusually active nervous centres. This form of mental precocity may be associated with good physical development. Such children are, as a rule, encouraged, or at least not discouraged, and, as a result the mental functions are forced into a premature maturity, which does not conduce to intellectual vigor in after life. They live in an intellectual atmosphere much above their years, and do not, as a rule, delight in the sports of children of their own age. If properly guarded and restrained during childhood, such children are capable of the highest intellectual development in after life; they can be moulded into the highest type of symmetry, or they can be dwarfed by early excessive intellectual activity into mental mediocrity.

In the second class he places precocious children of an altogether different type. These are children of poor physique, who have inherited physical weakness or actual disease. They are of a gouty or tuberculous diathesis, frail of body and fair of skin, beautiful and bright-eyed. They are, as a rule, affectionate, lovable, and mentally precocious. But their delicacy of constitution is such that they are incapable of sustained intellectual effort.

Their precocity is fitful, and is lacking in symmetry; it is common for them to have a remarkable memory, which is developed at the expense of other mental faculties. The child mathematicians, poets, and musicians, as a rule, belong to this class. Early in life they exhaust their mental energy in the development of a single faculty, and then lapse into mediocrity. Precocious children of this type need intelligent restraint and direction throughout the entire period of childhood. The chief aim in the management of such children should be the improvement of the physical and the restraint of the intellectual development.

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#### SOME OF THE REQUIREMENTS OF MODERN MEDICINE.

We have had occasion in several recent book reviews to allude to the fact that the modern medical book-maker must be something more than a mere clinician or successful practitioner. It is a trite saying that medical science has become too broad to be mastered in all its departments by one man. This is, however, but half the truth, for no man can be called an expert in any department whose knowledge is limited solely to its clinical aspects, its pathology, or its bacteriology. The physician who proposes to write or teach, or to be broadly successful in practice must be at least a clinician and a pathologist, and if not an actual bacteriologist, he must be in full touch with the most recent work in bacteriology.

Clinical experience is the most important factor of successful medical practice. It is not less so now than it has been in the past, neither will it become less so. But other factors have arisen and assumed prominent positions. They have not detracted from the importance of clinical medicine, but have been additions to it. They have added to the responsibility of the physician and made medicine, year by year, a more difficult science to master. While they have put new weapons into the

hands of the practitioner, his labor has been increased by the necessity of learning to use them.

It is not an uncommon error to suppose that the so-called practical physician may ignore pathology and disregard the teachings of the *post-mortem* room. Clinical experience frequently assumes a very different aspect in the light of *post-mortem* experience. Preconceived ideas of disease are frequently rudely shaken by the appearances discovered after death. Many theories believed in and taught for years, have been at first shaken and then disproved by recent accurate and scientific methods of pathological study. While this is in one sense discouraging, as tending to induce skepticism regarding all scientific teaching, it is in fact very encouraging. It is encouraging to know that medicine is a progressive science, that it does not stand still, and that medical men are capable of changing their opinions and have the courage to do so when the evidences of error are presented to them.

It is certainly a fact that the old time clinician, who was very expert as a clinician, but who knew little outside of clinical medicine, is to-day at a discount as an author and teacher. He is certain to fall into error in his own chosen field if he disregards that knowledge of disease which is constantly being acquired by workers in other fields. Bacteriology and pathology are not theoretical sciences that are being studied merely for pleasure and curiosity. They are as "practical" as any department of medical science. The whole aim of the laboratory worker is to add to our knowledge of disease, particularly as to its causes and results. This knowledge in the hands of the clinician, is to be used as an additional weapon in his daily combat with disease. The practitioner cannot be a broad and wholly successful man who ignores either of the four great elements of medical science—bacteriology, which explains the causation of many diseases; clinical medicine, which deals with the visible manifestations of disease; pathology which explains its results and methods of action; and therapeutics, which aims to apply a cure,

## THE VIRULENCE OF THE DIPHTHERIA BACILLI.

In an article in a recent number of the *American Journal of the Medical Sciences*, relative to the virulence of diphtheria bacilli occasionally found in the throat in cases presenting the appearance of simple angina, Dr. Herman M. Biggs presents a tabulated report of forty-eight cases showing the clinical appearances of simple angina, in which virulent diphtheria bacilli were found. After discussing the various aspects of the subject he refers to the following classes of cases :

First. The healthy throats in which diphtheria bacilli are present. In these cases investigation almost always shows that the individuals have been in contact with cases of diphtheria. The presence of the bacilli in the throat without any lesions does not, of course, indicate the existence of the disease.

Second. The simple anginas in which virulent diphtheria bacilli are found. These are to be regarded, from a sanitary standpoint, in exactly the same way as cases of true diphtheria.

Third. Cases of true diphtheria presenting the ordinary clinical features of diphtheria and showing the Löffler bacilli.

Fourth. Cases of angina associated with the production of membrane in which no diphtheria bacilli are found. These might be regarded, from a clinical standpoint, as diphtheria; but bacteriological examinations show that some other organism than the Löffler bacillus is the cause of the process.

It may be urged, as the author suggests, that the cases described in this paper were possibly instances of streptococcus inflammation of the throat in which diphtheria bacilli chanced to be present in the throat secretions and were only accidental accompaniments and not the cause of the inflammation. He apparently demonstrates, however, that such an inference is not justified and that the only reason for it would seem to be the desire to retain the anatomical conception of diphtheria—*i. e.*, that it is always an inflammation associated with the formation of a false membrane. It is this conception which he particularly combats. He is very positive in his belief that all inflammations



of mucous membranes due wholly or in part to the Klebs-Löffler bacillus should be included under the name diphtheria without reference to the site or extent or intensity of the inflammatory process or the character of the exudate. In this belief he is unquestionably in accord with the best and most recent authorities.

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#### THE PHILADELPHIA PEDIATRIC SOCIETY.

We are pleased to learn of the formation of a society for the special study of pediatrics in Philadelphia. That city is the home of some of the most eminent of American pediatric workers and the society under such leaders cannot fail to prove a success. The names that appear below are a full guarantee that the quality of the work done will be of high order. The society will unquestionably stimulate the study of pediatrics in Philadelphia, and it is to be expected that it will also prove another aid in raising the standard of pediatric literature. It was organized on December 22d, over one hundred physicians of the city being present. A constitution and by-laws were adopted, and the following officers were elected: President, Dr. J. P. Crozer Griffith; Vice-Presidents, Drs. Edwin E. Graham, Arthur V. Meigs, Frederick A. Packard; Secretary, Dr. Alfred Hand, Jr.; Treasurer, Dr. Charles F. Pettibone; Executive Committee, Drs. Alfred Stengee, J. Madison Taylor, Charles W. Burr, William B. Atkinson, Thompson S. Westcott. The membership is large, and includes many of the prominent physicians of Philadelphia and vicinity.

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The American Pediatric Society will meet in Washington on May 4, 5, and 6, under the presidency of Dr. Samuel S. Adams. We were in error in giving the date of meeting, in the last number, as the latter part of May.

## Bibliography.

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**The Diseases of Children and Their Homœopathic Treatment.** A Text-book for Students, Colleges, and Practitioners. By **Robert N. Tooker, M.D.**, *Professor of the Diseases of Children in the Chicago Homœopathic Medical College; Ex-President of the American Pedological Association.* Chicago: Gross and Delbridge. Pp. xiii.—813.

This is in many respects a most admirable book. It contains much that is practical and worthy of the highest commendation, but is marred by some serious blemishes. The author is clearly a practitioner of large experience and acute observation—in other words an excellent clinician. But like all pure clinicians he has fallen into numerous clinical errors. Either from lack of *post mortem* and pathological experience or from disregard of them, he has made mistakes in many purely practical and clinical matters. These are most apparent in the portions devoted to diseases of the lungs and digestive organs. The opening chapters on the signs of disease, methods of examinations, etc., are extremely good. The chapter on general therapeutics and the sections on the treatment of various diseases, we pass without comment, as there is no common ground for criticism or discussion. They undoubtedly present in reliable form the present homœopathic theories of treatment.

The chapter on breast feeding is a very good one and contains much excellent and practical advice. The same, unfortunately, cannot be said of the chapter on artificial feeding, which is irreparably bad. A single quotation is sufficient to prove the truth of this assertion. “Another, and, perhaps a simpler way to reduce the amount of casein is to let the milk stand for an hour or so after it is delivered, and then to pour off carefully the upper half for a very young infant and the upper two-thirds for an older one, and to do this without disturbing the lower strata of milk into which the principal part of the curd has gravitated. By resorting to this procedure, the upper portion, which is the one to be given to the infant, will be found to have about the consistence of human milk, with the proportionate

amount of casein and fat, and does not require the addition of water and but very little sugar."

Although the summary of the subject of infant feeding is very good, a chapter based on the idea that casein will settle and that *top milk* requires no diluting, cannot be commended.

The chapter on nursery hints and hygiene is an extremely good one. The next portion of the book is devoted to diseases of the eye and ear. It is very complete and worthy of particular commendation, though it seems to us that rather more space is devoted to these subjects than is fully warranted in a work of this character, almost as much space being assigned to them as to the very important subject of the digestive organs, including eleven pages on worms. We observe that neither the round worm nor the tape worm has yet been converted to the homœopathic faith, for one to three grains of *santonin* are required, according to the author, to dislodge the former, and a half drachm of the oil of male fern, or in stubborn cases drachm doses of turpentine repeated every half hour until an ounce is taken, being required to hypnotize the latter.

The eruptive fevers are considered on the whole in a very satisfactory manner, the symptomatology being in most instances excellent. The author believes that of all the causes predisposing to diphtheria the foremost one is *cold*. He is not a believer in the bacterial origin of diphtheria and several pages are occupied with fruitless discussion upon etiology. He concludes that we do not know whence the disease originates, whether it may not be "the product of disturbed metabolism—a sudden vitiation of normal secretions." No explanation is suggested as to why such sudden and extraordinary vitiation should occur. The vast majority of the profession will not agree with him that we are as much in the dark to-day regarding the etiology of diphtheria as was Hippocrates and Galen. Neither will they agree with him in the belief that peroxide of hydrogen in full strength, constitutes proper local treatment. It is, in fact, distrusted by many men of great experience, even when largely diluted and rendered alkaline, and has been dropped by them from the list of available remedies.

The chapter on pneumonia contains some admirable features, but is marred by an attempt to consider lobar and catarrhal pneumonia in the same chapter. It is quite true that there is a form of pneumonia which partakes of the character of both the lobar

and catarrhal forms, but the catarrhal pneumonia of infants is as unlike the lobar pneumonia of later childhood, as are two different diseases, and they cannot be satisfactorily considered together. It is to be regretted that such an attempt was made, for much of the subject matter of the chapter is really very excellent. But three pages are devoted to simple bronchitis; while eight are given to "capillary bronchitis." The section on nervous diseases is good, the chapter on disorders of sleep being particularly worthy of mention.

**Reference Book of Practical Therapeutics. By Various Authors. Edited by Frank P. Foster, M.D., Editor of the *New York Medical Journal* and of *Foster's Encyclopedic Medical Directory*. In two volumes. Vol. I. New York: D. Appleton & Co. 1896. Pp. v.—652.**

The plan of this great work is unique, and the first volume fully vindicates the judgment of the editor in his attempt to present to the profession a scientific, but especially practical work on therapeutics. To attain this end, the physical properties of drugs and their physiological actions have been allowed to occupy as little space as possible, thus giving unusual space to the discussion of their uses in the every-day practice of medicine. The busy practitioner who wishes immediate help in treatment, will find it here in lucid, concise, but ample form. It has apparently been the leading idea in preparing the book, to render it serviceable to the practicing physician. This, together with the large number of subjects considered, makes it a most valuable addition to the literature of therapeutics and treatment.

Although the work is devoted to general therapeutics, it merits notice in this place because of the liberal attention given to the therapeutic and hygienic management of children. They not only receive attention in the sections devoted to drugs, but they receive particular notice in those devoted to hygiene and dietetics. The dietetic management of the febrile diseases of children, the diarrhœal diseases, rickets, scurvy, and other conditions are described in special sections. A long chapter on milk is devoted to the general consideration of that important food element and its special uses as a food for invalids and children, infant feeding receiving extended and adequate notice. A noticeable feature of the work is the unusual attention given to



the various measures adopted for the relief of disease aside from actual drug treatment. The work is, in fact, devoted to practical therapeutics in the most liberal sense, and extends in every direction far beyond the field of simple *materia medica*.

**Autoscopy of the Larynx and the Trachea.** (Direct Examination Without Mirror.) By Alfred Kirstein, M.D., Berlin. Authorized Translation (Altered, Enlarged, and Revised by the Author) by Max Thorner, A.M., M.D. *Professor of Clinical Laryngology and Otology, Cincinnati College of Medicine and Surgery; Laryngologist and Aurist, Cincinnati Hospital, etc. With Twelve Illustrations.* Philadelphia: The F. A. Davis Company. Pp. xi.—68. Price, 75 cents.

This method of throat examination is extremely ingenious and apparently an important addition to the methods now in use. At first sight it would seem to be of particular value in making laryngeal examinations in children, at present a most difficult procedure. The warning of the author, however, regarding the difficulties of the operation even in the adult would seem to render it of but little practical value in the hands of the general practitioner. In the case of a nervous or struggling child, it would certainly not be available, except in the hands of an expert. It is quite possible in such hands that it might prove of value where otherwise no view of the larynx could be obtained. The little book is worthy of reading and the method is deserving of full trial.

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**Chronic Malnutrition of Infants.**—The combination of yolk of egg and olive or cottonseed oil made into an emulsion is found very useful in cases of rickets or chronic malnutrition in infants. The emulsion can be made as follows:—olive oil,  $\bar{3}$  ij; glycerine,  $\bar{3}$  j; yolk of one egg. Make an emulsion, and add one-half minim of creosote to each drachm. Occasionally it is better to use a smaller amount of creosote when this agent is not well borne by the stomach. A full teaspoonful of the emulsion is given three times a day after feeding. The preparation seems to be readily tolerated, even when the stomach is irritable.—*Practitioner*.

## Society Reports.

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### NEW YORK ACADEMY OF MEDICINE.—SECTION ON PEDIATRICS.

Stated Meeting, December 10, 1896.

J. HENRY FRUITNIGHT, M.D., CHAIRMAN, *Pro tem.*

#### FATTY LIVER AND ILEO-COLITIS.

DR. ROWLAND G. FREEMAN reported a recent autopsy on an infant of five months, dying at the New York Foundling Asylum. At the time of admission the child had had vomiting and diarrhœa. The liver was greatly enlarged, weighing fifteen ounces, and microscopical examination showed it to be extremely fatty. Congestion and pigmentation were found in the ileum. Dr. Freeman had collected the records of 206 autopsies at the Foundling Asylum, in fifty-seven of which, or 38.2 per cent., the liver was so fatty as to be plainly evident on gross examination. In the cases of tuberculosis, fatty liver had occurred in only 26.6 per cent., but it had been present in more than 50 per cent. of cases of ileo-colitis.

#### AMAUROTIC IDIOCY.

DR. HEIMAN presented a female child of fourteen months, who in addition to being idiotic, showed on ophthalmoscopic examination, a yellowish white patch occupying the position of the macula. According to the parents, this child had appeared normal for the first six months of its life.

#### THE TREATMENT OF DIPHTHERIA; AN INQUIRY INTO THE METHODS EMPLOYED AT BERLIN IN THE SUMMER OF 1896, THROUGH THE COURTESY OF PROFESSOR BAGINSKY.

DR. LOUIS FISCHER read a paper with this title. He said that it was now the practice of Professor Baginsky to always inject as concentrated an antitoxin serum as could be obtained, as soon as a bacteriological examination had established the diagnosis of diphtheria. Three forms of malignant diphtheria were recognized, *i. e.*, laryngeal, nasal, and septic—and two varieties of toxins—(1) membrane toxins and (2) tissue toxins. Antitoxin was most apt to fail in those cases in which there had been an

abundant formation of the tissue toxins. The following are some of the statistics quoted by Dr. Fischer, from hospitals in Germany treating diphtheria: In one hospital in Berlin, the average mortality for years preceding the introduction of antitoxin had been 37.63 per cent., but this had fallen to 27.8 per cent. in the cases of diphtheria in which both the serum and other measures of treatment were employed, and to 16.5 per cent. in those cases in which the antitoxin treatment had been used exclusively. Of 460 persons immunized at the Poliklinik, eighteen contracted the disease rather mildly at a late stage, but none died. The recent collective report published by the American Pediatric Society, is a striking contribution to the value of the antitoxin treatment, but the compilers, Dr. Fischer said, had failed to include in it about fifty cases that he had sent to them. Since that time, a series of 100 cases, including all types, had yielded a mortality of only 7 per cent. He had been accustomed to give 500 to 1,000 antitoxin units at the beginning of the treatment, unless there was stenosis of the larynx, in which case the dose of antitoxin varied from 1,000 to 4,000 units. Where the case was seen late in the disease, or there was much involvement of the glands, the primary dose was 2,000 units. If no improvement was observed after twenty-four hours, 1,000 or 2,000 more antitoxin units should be administered. Baginsky stated that he had occasionally seen joint complications, but they had all improved in time. He would not admit that the heart and kidney complications observed, had anything at all to do with the antitoxin treatment, for the same had been frequently observed before the advent of this remedy.

Referring to various other measures employed in the treatment of diphtheria, the speaker said that he considered strychnia the best of the cardiac stimulants, but it was often necessary to give whiskey very freely, and also oxygen. He cited cases in illustration of what could be secured, even in dispensary practice, by the use of antitoxin. The first case was that of a child of three years, who had had cold extremities and marked laryngeal stenosis when first seen. Two thousand units of antitoxin were administered after performing intubation, and an ice-bag was applied to the neck. The antitoxin was repeated after thirty-six hours. The tube and a large cast were coughed out on the third day. The child was intubated twelve times, and a total quantity of 8,000 antitoxin units was administered.



STATISTICS OF THE ANTITOXIN TREATMENT AT THE NEW YORK  
FOUNDLING ASYLUM DURING THE LAST FOUR MONTHS.

DR. J. LEWIS SMITH read a paper with this title. The deaths from diphtheria in that institution for the seven years ending December 1st of the past year were given as follows: In 1890, seventy-one cases of diphtheria with thirty-six deaths; in 1891, sixty-seven cases with thirty-five deaths; in 1892, sixty cases with twenty-three deaths; in 1893, 123 cases with thirty-four deaths; in 1894, 133 cases with thirty-two deaths; in 1895, ninety-four cases with forty-three deaths; in 1896, 147 cases with eighteen deaths. In the following series of sixty-five cases, reported by months, the Klebs-Loeffler bacillus had been found in all. In July, ten cases with nine recoveries; in August, six cases and six recoveries; in September, five cases and five recoveries; in October, nineteen cases and eighteen recoveries, and in November, twenty-five cases and twenty-four recoveries. The fatal case in July was an infant of seven months, who was nearly moribund at the time of its admission, and who had, in addition to the diphtheria, double pneumonia. In this case, no appreciable effect was observed from the antitoxin. Of these sixty-five cases, twelve had more or less croup, but only three required intubation. Dr. Smith, while disclaiming any partisan spirit in this matter, said that a regard for the truth compelled him to make the statement that it seemed to him that this dreadful type of diphtheria—the laryngeal variety—had, by the antitoxin treatment, been largely shorn of its terrors, and, that at last we seemed to be in possession of a remedy of real value in these cases. But while admitting this, he did not wish to imply that we should ignore such well recognized local treatment as irrigation with a saturated solution of boric acid. He had seen one case of diphtheritic conjunctivitis pursue an unusually mild course under local applications of boric acid solution, and the internal administration of antitoxin, and he felt that the mildness of this case was chiefly due to the action of the antitoxin.

## DISCUSSION.

DR. EDWIN ROSENTHAL, of Philadelphia, said that he had observed the effects of antitoxin in 156 cases of what would be called malignant diphtheria. In this number there were seventy-six laryngeal cases, of which four died. Thirty-four were intubated, and three died. Formerly, he had seen sixty-eight



deaths in a series of 100 intubations, and that too when he had had the advantage of good assistants and nurses. These facts seemed to indicate that there was something in the antitoxin treatment of diphtheria. Much had been said about the occurrence of sudden death after the use of antitoxin. In the days before antitoxin, two of his patients had suddenly expired while he had been preparing his instruments for intubation. As it took less time to give the injection of antitoxin than to prepare for intubation, it followed that had these deaths occurred at the present time, the antitoxin would have been given in all probability, and the almost immediate and sudden death of these children would have been ascribed to the antitoxin.

DR. HERMAN M. BIGGS exhibited a series of charts illustrating the results of the antitoxin treatment in various parts of the world, chiefly in Berlin and Paris. To overcome the objection made by the opponents of antitoxin, that the *percentage* of deaths did not indicate the true results of the antitoxin treatment he had had collected the absolute number of deaths. Thus, in Berlin, for the first six months of the years from 1889-95, the average number of deaths was 668. In 1896, under the quite general use of antitoxin, the absolute number of deaths for the first six months was only 294. In Paris, the average number of deaths for the first six months of these years, was 923, yet in 1895 the absolute number of deaths in the first six months was 228, and in 1896, 329. Monot had collected the deaths in 1895 in all French cities having a population over 20,000, and had compared them with the average deaths in the period from 1888-95. The average number of deaths was 2,627, and in no single year was the number of deaths below 2,100; yet in 1895, after the general introduction of antitoxin into France, the actual number of deaths was 904. Of the German cities having a population over 15,000, the average death rate per 100,000 for the period from 1886-94 was 106, while in 1895 it was half that of 1894. In New York City there had been a sudden fall in the number of deaths during the past year. The following statistics were interesting as bearing on the importance of the *early* administration of antitoxin. When administered on the first day of the disease, the mortality was 3.5 per cent.; on the second day, 8 per cent.; on the third day, 12.8 per cent.; on the fourth day, 23.6 per cent., and on the fifth day, or later, 35 per cent. In other words, if antitoxin were not used until the fifth day of the disease, or later, the results obtained would not differ materially from those observed after the other recognized methods of treatment. In conclusion, Dr. Biggs said that although Professor Virchow had at first been opposed to the antitoxin treatment, he had been convinced of its efficacy through the sheer force of the statistics that had accumulated.

DR. A. CAMPBELL WHITE said that through his connection with the Health Department he had seen about 600 cases of diphtheria during the past year. Only about one-fifth of this number had received antitoxin, but such as had received it had done better than the others. About 50 per cent. of the whole number of cases could be considered as mild. In his experience with antitoxin, the intubation tube had not been worn longer than in those cases of intubation in which no antitoxin had been employed. In the case of a child, he had never known recovery to follow the early coughing up of a cast of the larynx. In the antitoxin cases he had observed no bad results, although there had been occasional cases of heart failure just as there had been before the days of antitoxin.

DR. HENRY F. KOESTER said that in his work for the Health Department he had treated about 400 cases with antitoxin. Most of them had been first seen at a late stage, often after hope of recovery had been abandoned by the attending physician. Since April 1, 1896, he had injected ninety-three cases, of which two had proved fatal. One of these fatal cases was a child who died in convulsions, seventeen days after the injection. The other child had been injected on the fourth day of the disease, and had died of croup and sepsis, seven hours after the injection. This case had been quoted in one medical journal as a failure of antitoxin, and it had been stated there, though incorrectly, that the injection had been made on the second day of the disease. Of the last ninety-three cases, twenty-five were laryngeal, and the five that he had himself intubated had all recovered. Since the introduction of antitoxin he had done fifteen intubations without one death. It was his rule to intubate as soon as it seemed to be required, and at the same time to give a large dose of antitoxin. He preferred to give no nourishment for the first twenty-four hours after intubation—only water and a fortieth of a grain of strychnia, every three or four hours, to a child of two or three years. If the stenosis returned after the removal of the tube, and was due to spasm, it could be controlled by a dose of Dover's powder. The chief points in his treatment were the use of strychnia and glonoin for the heart, and the use of cold applications instead of antipyretic drugs. In the non-laryngeal cases he had observed such good results from antitoxin, that he had come to look upon a physician who did not use antitoxin as guilty of criminal neglect.

DR. JOSEPH E. WINTERS said that he could recall several cases in which recovery had followed the coughing up of a cast of the larynx. In his opinion, the question of the value of the antitoxin treatment would not be settled by such statistics as had just been presented, but only by careful observations in private practice. In 1884 there were 1,090 deaths from diphtheria in New York City; in 1887, 2,167 deaths; in 1890, 1,262, and in 1894, 2,370.

Again, in 1888 there were 350 deaths from diphtheria in Philadelphia; in 1889, 375, and in 1892, 1,424 deaths. These variations, from year to year, should certainly be very carefully weighed before coming to a definite conclusion regarding the value of the antitoxin treatment. One of the greatest clinicians that had ever lived—Dr. Graves, of Dublin—had published in his book an excellent description of the variable character of epidemics. Thus, he said, from 1801 to 1804, almost every case of scarlatina that he saw in private consultation or hospital practice, died. On the other hand, from 1804 to about 1831, although scarlet fever was constantly raging, there were very few deaths. Again, from 1832 to 1835 there was another period in which the disease was about as malignant as it had been between 1801 and 1804. Such examples might be multiplied almost indefinitely. Thus, Dr. Bieser, of New York, had reported twenty-five consecutive cases of diphtheria treated without antitoxin, and all recovering. Dr. P. H. Ernst had reported thirty-two cases of diphtheria treated in dispensary practice without antitoxin, with only four deaths, and also nine consecutive intubations with seven recoveries. Yet Dr. Ernst had treated twelve dispensary cases with antitoxin, and seven of them had died. Similarly, Dr. Bieser had used antitoxin in seven consecutive cases of laryngeal diphtheria, with five deaths. The statement had been made by one of the speakers that these cases had not received antitoxin until the fourth day, but this was not true, as four of them had been injected with antitoxin on the first or second day. The difference in Dr. J. Lewis Smith's results with antitoxin recently, and those published in his book in connection with his experience with it in the same institution last year, was marked, and was to be explained by the varying character of the epidemic. Nothing had been said about the death rate in London from diphtheria, although an array of statistics had been presented from Berlin and Paris. In London, in 1891, there were 1,361 deaths from diphtheria; in 1893, 3,263 deaths. During the last eighteen months, or in other words, since the introduction of antitoxin, it would be found by examining the files of the *London Lancet*, that in every single week the average death rate from diphtheria was higher than it had been for the past ten years. Why was this, when antitoxin was being very generally used in the hospitals of London? At the Willard Parker Hospital the death rate from diphtheria last August was very high, 37.7 per cent.

Referring to the matter of dosage, Dr. Winters said that very recently it had been decided to increase the dosage of antitoxin in the Willard Parker Hospital from 1,500 or 2,000 units to 6,000 units in every case of diphtheria. This had been done in thirty cases, eighteen of which had died. Once before in that same hospital an increase of the dosage of antitoxin had been attended by an immediate increase in the mortality from 30.4 to 50 per cent.



Dr. John Dorning has treated seven consecutive cases with antitoxin, some coming under treatment within twelve or eighteen hours after the onset of the disease, yet all had died. Dr. Alexander Dallas, of Bayonne, had treated eleven consecutive cases with ten deaths. Last June he had seen a baby of eight months who had very small diphtheritic patches in the throat. On the second day of the disease—*i.e.*, two days before—it had received 1,000 units of antitoxin, and the dose had been repeated the next day. It had had a convulsion a few hours after the first injection, another after the second dose, and had remained in a state of tonic spasm from that time until he saw it. This spasm did not relax up to the death of the child. The case of Professor Langerhans' child had been published all over the world, and also the statement that it had not died from the immunizing dose of antitoxin, but from obstruction of the trachea by food. Professor Langerhans had denied this over his own signature, yet his statement had been published in only one medical journal.

In conclusion, Dr. Winters said that what we wanted was not a specific that would cure diphtheria in Paris and Berlin, but which would cure diphtheria all over the world. He believed that when Paris should be visited by the kind of epidemic now raging in London, there would be as high a death rate in Paris as now exists in London. He believed that antitoxin was a dangerous poison, which might cause immediate death. It was rather significant that while a year ago the Board of Health had on hand eight horses for the production of antitoxin, they now had only four horses for this purpose.

DR. ADOLPH RUPP referred to several cases in which antitoxin had led to disappointing results. He said that he had only just learned the easy way to knowledge—it was to do just as the antitoxin men want you to do.

DR. H. W. BERG said that the high death rate at the Willard Parker Hospital last August, was explained by the excessively hot weather at that time, which, as was well-known, had caused an unusually large number of deaths all over the city. His experience accorded with that of Dr. O'Dwyer regarding the shorter time the tube was required in cases treated with antitoxin. It seemed strange to him that out of the thousands of cases treated with antitoxin there should be so few reports of bad results from its use, if it was a dangerous poison. As he believed that most physicians were now fully agreed as to the general value of antitoxin in diphtheria, he thought it was our duty now to determine the proper dose to be employed.

DR. J. WINTERS BRANNAN said that he had been chiefly responsible for the very large doses employed recently in the Willard Hospital, and he had been led to employ them by reading of the exceptional success with antitoxin that had been attained by Dr.



Martin, of London. It should be understood that these large doses he had not ordered given to the mild, but to the septic cases. Of five recent cases of this type, two had died, and two more would probably die, yet if he succeeded in saving one, this result would be 20 per cent. better than had been done before in that hospital. This seemed a sufficient justification of his position.

DR. W. H. PARK said that personally he used to feel that a case of laryngeal diphtheria was almost hopeless; now, with the help of antitoxin, he expected a large proportion of these cases to recover. Dr. Winters in speaking of the very high death rate last August, had made no mention of the excessive heat at that time, and in referring to the large doses, he had omitted to say that they were not used in the mild cases. As to the quantity of antitoxin serum now being manufactured by the Health Department, he stated that the department employed nine instead of four horses, and also that the serum is now five times stronger than formerly.

DR. FISCHER, in closing the discussion, attributed the poor results obtained in England largely to the fact that the antitoxin serum of Burroughs and Welcome was very generally used, and this had been shown to be comparatively weak in antitoxin.

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**Etiology of Tuberculosis in Infants.**—Kempner (*Münch. med. Abh.*) agrees with those who regard the tuberculosis of infants as the result of post-fœtal infection. He formulates his view as follows: "Tuberculosis in infancy is, in the rarest cases, congenital, and these must be regarded as exceptions; in by far the greater number of cases it depends upon post-fœtal infection accompanied and assisted by an inherited predisposition in the first place, and an acquired predisposition in the second." He bases his conclusion on the following facts: (1) Only few certain cases are known of intrauterine transmission of tuberculosis amongst man and animals. (2) The comparatively small mortality from tuberculosis in the first year of life. (3) The fact that tuberculosis in childhood especially originates from disease of the bronchial glands, while in the rare cases of fœtal tuberculosis the bronchial glands are either not affected at all, or only slightly affected. Lastly, from the results of investigation of foundling hospitals. In France, out of 18,000 children only 20 were found to be tuberculous, and in St. Petersburg the proportion was similar.—*British Medical Journal*.

## Current Literature.

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### MEDICINE.

**Thomson, John: Curious Habits in Children.** (*Child Study Monthly*. 1896. Vol. ii., No. 2.)

What are called "bad habits" in children are unfortunately very numerous, and the variety of them seems at first sight no less striking than their number. When, however, we look at them more closely, we find that they very readily range themselves under three quite distinct headings. There are, firstly, certain acts of pure intentional mischief to which the term is sometimes applied; and then there are two classes of "bad habits" proper, which we may term Negative and Positive Bad Habits.

To the *Negative* class such unmannerly tricks as slamming doors, fidgeting and making involuntary grimaces, turning in the toes and slouching, untidiness, neglect of personal cleanliness, being late for school, and dilatoriness of all kinds.

These habits are little sins of omission, and they consist in leaving undone little things which ought to be done; they are unpremeditated, and they give no definite pleasure to those who practice them. They are persevered in, not because the child enjoys the noise of a slammed door or the sensation of a dirty skin, but because the amount of self-control required to do the right thing under the circumstances would be to him at the time excessively irksome and unpleasant. They indicate a faulty power of inhibition due to uncompleted development of the nervous system and inadequate training. They might be termed, to use medical phraseology, little neuroses within physiological limits.

As representatives of the *Positive* class, on the other hand, a variety of "bad habits" may be mentioned which, although differing greatly in many respects from one another, have yet the main points in common. Such are the practice of eating indigestible articles, such as coals, earth, plaster, etc., biting the nails, sucking the thumbs or fingers, and many others.

These habits are, as it were, little sins of commission—they

consist of doing things that ought not to be done. Some of them may, indeed, grow out of apparently automatic actions to begin with, but by the time that they are established as fixed habits they are not unpremeditated, like the others, but are resorted to of set purpose because of the great gratification which they afford to the child's feelings. They are certainly to be regarded as minor psychoses.

The author first refers to pica or dirt eating. An extended abstract of his paper on this subject was published in the ARCHIVES of February, 1896. He then refers to several trivial habits, such as wetting the palms of the hands and biting the nails. It is very common to notice evidences of this practice on the hands and even on the feet of little children. It is also by no means uncommon in adults. In children it has apparently been used merely to help to pass the time when things were dull.

The last habit or class of habits to which the author refers is the sucking of the fingers or thumb, or the lips, tongue, or other parts of the body, or of some other object.

These are usually regarded as trivial and unimportant practices, but yet, when studied, there are certain facts about them of considerable interest from a psychological point of view. They seem worthy of more study than they have yet received. The only writing on the subject of any value which the author has been able to discover is a very interesting paper by Dr. Lindner of Buda-Pesth.

The habit assumes different forms, according to the object sucked. In some cases the mouth and tongue are the only parts used. The child shuts his mouth and moves his tongue to and fro sucking the inside of the lips and cheeks. Sometimes the lips are parted and the tongue is partially protruded during the act, and then it is called "sucking the tongue." In other cases a part of the body outside of the mouth is sucked, commonly the thumb or one or more of the fingers of either hand; less frequently the back of the hand or a part of the arm, or even the big toe. In a third class some foreign body is chosen to suck—the mouthpiece of a baby's bottle, the corner of a sheet or night-dress, or a kneaded up piece of bread.

Generally the children take the same thing every time to suck, but rarely one meets with a child who will change, *e.g.*, from one finger to another, or from the tongue to the arm, and so on.



The habit usually comes to an end spontaneously as the children grow older. They gradually come to take less pleasure in it, and the growing interests of life help to wean them from it by leaving them less unemployed leisure both of mind and body. Sometimes they are helped by their fingers getting sore. The sucking of the lips and tongue is often continued much later in life than that of the thumb and fingers.

As to the result of such habits, there can be no doubt that in ordinarily healthy children, unless carried far or accompanied by manifestations of excitement, they often do no great harm, although certainly they are always objectionable. In those children, however, in whom they cause emotional disturbance, they must surely be very bad for the nervous system, and should be put a stop to as soon as possible.

It seems to the author, to compare small things with great, that such habits may possibly be best regarded as instances of a sort of infantile dissipation—instinctive attempts in a small way to find in gratification of the lower appetites a satisfaction which should only come from the exercise of higher faculties of the mind.

The rational treatment of all such bad habits must therefore not be confined to local restrictive measures and to punishment for each individual offense, but must include a general attention to the child's health and happiness, and intelligent endeavors to give him a more interesting life, and to encourage all wholesome sources of gratification.

**Leroux : Hemiplegia due to Embolism of Cardiac Origin in the Course of a Diphtheritic Angina Treated by the Serum.**  
(*Journal de Clin. et de Therap. Infantiles.* 1896. Vol. iv., No. 13.)

A boy of eleven years had an attack of tonsillar diphtheria, and was treated with two injections of antitoxin serum. Bacteriological examination of the exudate showed the presence of Löffler's bacilli and streptococci. In eleven days he was apparently well, but four days later he suddenly fell down unconscious, and on reviewing after several hours, right sided hemiplegia and aphasia were found to be complete; the soft palate was also paralyzed. A systolic base murmur was found on examining the heart, but the pulse was regular.

Under treatment with electricity, massage, and iodide of



potassium, the paralysis improved markedly, and the aortic murmur disappeared. Within five months the boy was able to walk well.

The author believes the cardiac lesion to have been an infectious vegetative endocarditis of the aortic orifice, and the cerebral lesion an embolism of the left Sylvian artery, due to the endocarditis. The palate paralysis was simply of diphtheritic origin; the exact date of its onset could not be learned.

**Labbe: Tuberculosis of the Myocardium.** (*Rev. Mens. des Mal. de l'Enfance.* 1896. Vol. xiv. No. 6.)

To the thirty-six previously published cases of this very rare affection the author adds two very interesting ones.

CASE I. A six year old boy, of tuberculous family, developed a persistent cough after an attack of broncho-pneumonia; at the same time the cardiac area was increased, the heart's action irregular, and the liver much enlarged, with ascites present. Finally the cardiac symptoms (pain, irregular pulse, general œdema) increased, and sudden death resulted.

The autopsy showed the presence of tubercles in the brain, lungs, liver, and spleen. The pleuræ were adherent to the pericardium, which was thickened, and contained some cheesy nodules. The hypertrophied heart muscle was hard and lardaceous, especially at the apex and on the external surface of the left ventricle.

CASE II. Female child, one year old, with a suspicious bronchitis and enlarged glands, developed varicella and pertussis, and died with all the symptoms of pulmonary tuberculosis.

At the autopsy, a large cavity was found in the middle lobe of the right lung, and tubercles in both lungs, pleuræ, and in the spleen. A cheesy tubercle penetrated the myocardium, being visible underneath the pericardium, which was adherent at the apex. Tubercle bacilli were demonstrated in sections from both cases.

While the second case presented no clinical symptoms pointing to the cardiac lesion, the first gave signs in no way characteristic of a tubercular heart affection. The former seems to be the course in the majority of these cases.

Tuberculosis of the myocardium may occur in one of four forms:

1. The small miliary, semi-transparent tubercle; very rare, and easily overlooked.
2. The large tubercle, from lentil to cherry-sized, or even as large as a hen's egg—the most frequent form, and illustrated by Case II.
3. The diffuse form, very rare, and typically illustrated by Case I.
4. The tubercular myocarditis described by Boehmer, and consisting of a diffused sclerosis with miliary tubercles (no caseation).

While the pericardium may or may not be involved in tubercular inflammation of the myocardium, the endocardium is generally unaltered except in the diffuse form of tubercular myocarditis.

The lesion occurs most frequently in young subjects, seventeen of twenty-nine cases being under fifteen years of age; and it is, as a rule, secondary to tuberculosis elsewhere in the body.

It is difficult to trace the mode of extension of the process. In a small number of cases, the bacilli may be carried by the blood in the pulmonary veins, or there may be direct spreading from a tubercular pericarditis; but the most frequent method is probably by way of the lymphatics, which explains the facts that the tubercles are deeply seated in the cardiac muscle, and that the myocardium is often involved secondarily to the mediastinal lymph nodes.

**Variot: Spasm of the Glottis in the Course of Broncho-Pneumonia.** (*Jour. de Clin. et de Thérap. Infantiles.* 1896. Vol. iv. No. 32.)

The writer has observed two forms of laryngeal spasm (severe false croup), complicating cases of broncho-pneumonia. One, in which the mediastinal lymph nodes were large enough to compress the recurrent laryngeal nerve; the other, in which the lymph nodes were not enlarged, and the spasm can only be explained as reflex, due to the lesion in the lung parenchyma. To use the old clinical expression, it is "an internal convulsion." The differential diagnosis from croup is always very difficult.

A case is reported in a rachitic boy of a year old, with broncho-pneumonia spots in both lungs, whose dyspnœa was so marked as to necessitate rapid intubation. The throat

remained clear, and a culture demonstrated the presence of staphylococci only. Death occurred on the sixth day of the illness.

At the autopsy the laryngeal mucous membrane was found to be healthy, except for two small ulcers over the cricoid cartilage, evidently caused by pressure of the tube. There was a good deal of broncho-pneumonia and emphysema, but the lymph nodes were not enlarged.

It is possible that the child's rachitic state predisposed him to spasm of the glottis; but, nevertheless, the condition occurred only when the broncho-pneumonia appeared.

In view of the frequent occurrence of ulceration after intubation, Variot considers it a real advantage, whenever possible, to substitute temporary for permanent catheterization of the larynx.

**Lindsay, John: Chronic Hydrocephalus, with Death in the Twenty-third Year.** (*British Medical Journal.* 1896. No. 1895.)

A case of hydrocephalus, lasting from infancy well into manhood, is sufficiently rare to deserve recording. The following is such a case:

B., a male, died on April 13, 1896, aged twenty-two years and one week. He is said to have had "water in the head" when a year old, but was supposed to have recovered from this, though the head remained large. He grew up a bright, intelligent child till his seventh year, when the head symptoms recurred and rapidly developed. Very soon he became blind, and a few years afterwards his speech also was lost, though hearing remained unaffected till death. During the course of the disease he was subject to infrequent and very slight convulsions.

At death the measurements of the head were: Circumference at the level of the occipital protuberance, 26 inches (this had been the measurement for some years); length over the surface from root of nose to occipital protuberance, 16 inches; from mastoid process to mastoid over the vertex, 19 inches. The skull was completely ossified, the face infantile in size and appearance, the teeth decayed.

The spine was sharply curved, the convexity to the left; the left thorax flattened, the right prominent and reaching down

over the pelvis. All the joints were strongly flexed, the feet extended; the head of the left femur lay upon the ilium. The body and limbs were shrunken to the skeleton, and of boardlike rigidity. Only the shoulder and fingers of the right side were movable, voluntary movement being accompanied with tremors. A straight line from vertex to great toe measured 40 inches. The genitals were well developed, and covered with hair. For fifteen years he had been nursed in the arms like an infant, constantly whining and crying out. Death was preceded by coma of about four hours' duration.

**Bresler: A Case of Infantile Progressive Paralysis.** (*Neurologisches Centralblatt, University Medical Magazine.* 1896. Vol. iii. No. 7.)

The author reports the case of a girl, aged thirteen and a half years, whose mother, several maternal relatives, and grandmother were insane, but whose brother and sister were in good health. When six years of age, the patient went to school, but made only slow progress, and was finally expelled as unruly and unteachable. Her illness dated from fourteen months prior to her first visit; at that time she became affected with chorea. When seen for the first time she was restless, dull, irritable, cried, was completely demented, and helpless. She could formerly read and sew, but for the past two or three years these had been impossible; she refused food and was unclean in her habits. Articulation was unaffected; special senses apparently normal. There were no paralyses, the gait tripping. There was loss of memory, but no hallucinations; the patient took no interest in her surroundings. During the first three months of observation the patient became duller, and nutrition failed. At the end of four months she became confined to bed because of excessive weakness; there occurred slight facial paralysis and bed-sores. The patient became more restless and less conscious, and had some rise of temperature. There ensued three convulsions with conjugate deviation of the eyes, and six days later, under symptoms of general paralysis of the brain, death occurred, the patient being fourteen years and two days old. She had never menstruated. At the autopsy there were found thickening of the dura mater, turpidity, and œdema of the arachnoid. In the subarachnoid space there was a quantity of serous fluid. The pia was in



places adherent; the convolutions atrophic. The brain substance cut like liver, and the cut surface showed many dilated veins. The upper layer of the cerebrum could be stripped off like the skin of a roasted apple. The absence of bulbar symptoms, difficulty in articulation, and of ideas of grandeur, is noteworthy. The reported cases occur mostly in girls, and the initial symptoms are frequently those of chorea.

**Caverly, C. S.: Notes on an Epidemic of Acute Anterior Poliomyelitis.** (*Journal of American Medical Association*, 1896. Vol. xxvi. No. 1.)

This paper is based upon an investigation made by the author as President of the State Board of Health of Vermont upon an epidemic of acute nervous disease. It prevailed with increasing severity during July, apparently reached its climax about the first of August, and steadily declined until about the first of October, the last case occurring early in that month.

Ninety cases were under six years of age; 39 were boys and 22 girls; sex of the remainder not stated. Fifteen cases were between the ages of six and fourteen; 5 were males and 6 females; sex not stated in 4 cases. Fifteen cases were over fourteen years.

The outbreak consisted of upward of 130 cases of disease in which the commonest clinical manifestation was some degree of motor paralysis of widely varying extent. It will not surprise any one that so large a number of cases presenting a bewildering variety of initiatory constitutional symptoms, as well as local paralyzes, should have proved a very knotty problem for the diagnostician. It was long a question whether this was an epidemic of one, two, or more diseases, and along the established lines of symptomatology and pathology there was no solution of the problem.

The following case is an illustration of the mildest type of the disease, a type that included about forty cases: Boy, three years, American. Hygienic surroundings good; previous health good; active child; stronger than his brother two years older. No apparent cause. Fell sick June 20th. Moderate fever, coated tongue, loss of appetite, sluggish bowels. His condition was confidently ascribed to indigestion, and after two or three days the continuance of the symptoms, though decreasing in severity,

proved troublesome of explanation. On the third day his parents insisted that he could not use his legs. It was soon evident that this was the case. His reflexes were normal, sphincters unaffected, no anesthesia or noticeable hyperesthesia. The weakness was most marked in the large extensors of the thigh. After the entire subsidence of his febrile symptoms, his muscular weakness began to improve, at first very slowly. In three weeks he had gone on to full recovery.

The immediate apparent cause is stated in thirty-seven instances. Of these overheating is mentioned twenty-four times, chilling of the body four times, trauma four times, while fatigue, typhoid fever, pneumonia, and whooping-cough are mentioned. There was a general absence of infectious disease as an etiological factor in this epidemic. The element of contagium does not enter into the etiology either. In but a single instance did more than one member of a family have the disease, and as it usually occurred in families of more than one child, and as no efforts were made at isolation, it was very certain that it was non-contagious.

The paralysis, which was the leading and most common characteristic of this series of cases, occurred in 119 instances. Of the remaining thirteen, seven died before paralysis had time to develop, or it could not be determined whether there was really paralysis or not, and the remaining six that had no paralysis, all had a group of symptoms very common in the initial stage in those which were paralyzed, such as headache, fever, convulsions or nausea, one or all. In those cases in which the exact day of the paralysis was noted, it is stated to have occurred four times on the first day, eight times on the second, ten times on the third, five times on the fourth, three times on the fifth, once on the sixth, four times on the seventh, and once on the tenth day of illness. It is probable that the actual duration of the premonitory symptoms prior to the appearance of the paralysis was often overestimated, since loss of power in the extremities, especially in children, might easily go unnoticed for some time, unless the physician or friends were looking for it. In several instances the loss of power in the legs was the first symptom noticed.

In the light of recent pathologic researches taken in connection with the most noted clinical features of this outbreak, viz.: the season of the year, the preponderance of cases among chil-

dren, the widely varying and almost universal paralysis and the low mortality, the conclusion seems unavoidable that the essential disease was poliomyelitis. Under this classification the epidemic at once assumes great importance in several particulars:

1. From the simplest fact that it was an epidemic of poliomyelitis.

2. From the great number of cases occurring.

3. From the simultaneous affectation of the lower animals.

While epidemics of poliomyelitis are not unknown or unrecorded, recent authorities speak only vaguely of their occurrence. It has not thus far found a definite place in the descriptions of this disease. The fact that poliomyelitis may occur epidemically, suggests, of course, an infectious origin, a view of the nature of the disease which has only been recently discussed.

**Durham, Herbert E.:** **A Special Action of the Serum of Highly Immunized Animals, and its Use for Diagnostic and other Purposes.** (*New York Medical Journal.* 1896. Vol. lxiii. No. 16.)

The *Proceedings of the Royal Society* contains an abstract of an article on this subject. The following conclusions, he says, are the outcome of an inquiry into the nature of Pfeiffer's reaction, which was made at the suggestion and under the guidance of Professor Max Gruber, of Vienna. The communication deals with the effects produced upon microbes *in vitro* by the serums of highly immunized animals, even when extremely dilute. This portion of the inquiry was carried out mainly in the bacteriological laboratory of Guy's Hospital.

1. A remarkable series of effects are produced on an emulsion of actively motile microbes by the addition of minute quantities of potent kinds of serum.

2. These effects have been observed with the cholera vibrio, a variety of other vibrios, the typhoid bacillus, the *Bacillus coli communis*, and the *Bacillus pyocyaneus*.

3. It is highly improbable that the phenomena are limited to the groups and species here named. Further observation is requisite upon other motile, as well as the non-motile bacteria.

4. The most prominent of the effects thus produced consists of an immediate aggregation of the bacteria into clumps; this



is combined with loss of motility. Marked inhibition of growth also occurs.

5. The formation of clumps can be detected readily by the naked eye. Eventually they gravitate to the bottom of the tube containing them.

6. A complete action is obtained when all the clumps settle down, leaving a perfectly clear fluid. The time required for settling varies somewhat with different organisms, as also according to the amount and potency of the serum used.

7. The least quantity of serum which will give a complete reaction in about one hour forms a convenient standard. A highly potent serum will react thus in one per cent. solution, which is a convenient unit.

8. The more intense the action of the serum, the more rapid and the more complete are the changes which ensue.

9. By means of the intensity of action in varying dilutions, two or more samples of serum, or of freshly drawn blood, may be gauged according to their potency.

10. Normal serum, and the serum obtained by immunizations with totally unrelated groups of organisms, do not interact upon the unrelated microbes, so far as present observation shows.

11. The action of cholera serum upon more or less closely related vibrios may be complete or *nil*. A series of gradations in intensity of reaction has been observed with cholera serum and vibrios of other species, and *vice versa*.

12. The action of such serum cannot therefore be regarded as specific; it is better named *special* or *specialized*.

13. The limit of the absolute value of such serum tests for the diagnosis of cholera vibrios has yet to be determined.

14. All the typhoid bacilli from nineteen different sources hitherto observed react with typhoid serum; none of them react with the *Bacillus coli* serum.

15. Of the *Bacillus coli* varieties hitherto proved, some do not react with one sample of *Bacillus coli* serum.

16. The agreement in action of the typhoid bacilli points to the use of the method for diagnostic purposes. Given a young culture and typhoid serum, a diagnosis can be made in a few minutes.

17. As shown by serum experiments, the variation within the *Bacillus coli* group is greater than that of *Bacillus typhi*.



**Williams, Harold:** *Enuresis in Young Children.* (*Boston Medical and Surgical Journal.* 1896. Vol. cxxxiv. No. 11.)

The author reports sixty-two cases of nocturnal enuresis. Of these thirty-four were girls, twenty-eight were boys. The ages ranged from two to fifteen years, the greatest number occurring at seven years. Cases were distributed so evenly, however, that age did not seem to be an important factor.

In 13 of the cases a definite cause of reflex irritation was detected and corrected, in 12 with a cessation of the enuresis. These causes were as follows: Adherent prepuce, four cases; vulvo-vaginitis, with gonococci, one case; oxyuris vermicularis, five cases; chronic ileo-colitis, one case; prolapse of the rectum, one case. A condition of anæmia and neurotic temperament and history were noticed in a large but unrecorded number of the children. A balance of forty-nine cases remain in which the cause is unexplained.

The author refers to an article in the ARCHIVES OF PEDIATRICS for November, 1893, by Dr. B. K. Rachford. He regards the incontinence of urine in children as a true neurosis, and, like other neuroses in children, as made up of "a tripod of etiological factors, namely, (1) irritable and unstable nerve centres, (2) anæmia with consequent malnutrition, (3) reflex stimulation of certain nerve centres in the lumbar cord." The paper sums up with these conclusions: "There are three important etiological factors of incontinence of urine in children, namely: First, excitability of the nerve centres produced by heredity and age; second, anæmia or mal-nutrition, increasing the excitability of the nerve centres; third, reflex irritation. These factors are interdependent and act together in producing this condition."

The author is disposed, however, to emphasize more strongly than Dr. Rachford has done another factor, namely, the control which is exerted by the higher over the lower centres—the influence exerted by the brain. Pursuing the method of Dr. Rachford, he states that according to Coulton, there are fibres in the columns of the cord connecting the lumbar centres through the cerebral peduncle with the brain, and through these fibres the influence of the brain is felt; this being the mechanism of the familiar fact that after the first year of life the act of urination is largely governed by the will.

To the three etiological factors of Rachford's, which he slightly

modifies, he adds those cases of enuresis caused, at least in part, by

- (a) Direct volition.
- (b) Auto-suggestion.
- (c) Retarded mental development.
- (d) Enfeeblement of the will.

All cases of enuresis must therefore, be divided into two classes:

(1) Those of local organic origin, such as malformations, etc., and

(2) Those of functional origin, in which the function of the bladder is interfered with in consequence of functional or organic disease of other organs.

These cases of functional origin he regards as due to seven factors, one or more of which are probably present in every case.

(a) Undue excitability of the spinal centres is a factor which is probably present in a large majority of cases. It is, therefore, of importance to make careful inquiry into such possible causes as may augment the condition: namely, stimulating articles of diet such as strongly albuminous food, tea, coffee, condiments and spices. Hygienic causes, such as sleeping on the back, stimulating plays, and the bad practice of tickling children must be thought of. Vicious habits.

(b) The author agrees with Dr. Rachford that anæmia is a most important factor. He is not, however, inclined to attribute so much to this cause.

(c) Reflex irritation is an important causative factor, such causes being detected in 13 out of the 62 cases. But it must be remembered that it is only a factor; not all cases of adherent prepuce, prolapse of the rectum, distension of the bladder, etc., lead to enuresis, and the physician must not be satisfied by removing this cause alone.

(d) Direct volition is a factor which must be regarded as present in some cases. The child shows unwillingness to rouse itself sufficiently, because it is afraid of the dark, because it is cold, or for some similar reason, preferring to wet the bed to subjecting itself to the discomfort of getting out of it. Or it may be an act of direct wilfulness.

(e) Auto-suggestion also seems to play an important rôle in some of the author's cases. The habit once instituted is con-

tinued through this cause, apprehension being an important factor.

(f) Of retarded mental development nothing need be said. It is merely necessary to bear in mind that the nerve supply of the bladder is only slightly developed during the first one or two years of life, and that this condition may persist longer through retarded development.

(g) Enfeeblement of the will is a factor of more serious importance and of more frequent occurrence than is probably generally recognized. Inhibitory impulses are conveyed from the brain to the spinal centres, and these restraining impulses are undoubtedly operative during sleep. Any cause which may lead to enfeeblement of these centres may lead to nocturnal incontinence, in which case it may be a symptom of grave import—a warning note, which if properly interpreted, may enable us to inaugurate such a system of hygienic education as will ward off some of the neurasthenias and hysterias of adult life.

**Power, D'Arcy :** **The Prognosis of Meningitis.** (*The Clinical Journal.* 1896. Vol. viii. No. 4.)

Tuberculous meningitis is fatal. Trephining and draining away the cerebro-spinal fluid reduces the intracranial pressure, and prolongs life for a period of days, or even weeks, but with the very rarest exceptions an attack of tuberculous meningitis terminates in death. Death is a frequent termination of the other forms of meningitis, but in them recovery is somewhat more frequent. A meningitis in which the symptoms appear suddenly in an otherwise healthy child, or in the course of an attack of pneumonia, influenza, or typhoid fever, is more likely to recover than one in which the symptoms come on insidiously. These slightly more favorable cases are often characterized by violent oscillations of the temperature, so that the chart shows a rise or fall of several degrees in a few hours. The urine is free from albumen, but its earthy phosphates are in the proportion of one, two or three of the alkaline phosphates, instead of the equal parts which exist in health, whilst the urea and chlorides are reduced to nearly half their usual quantities. Prognosis, however, in cases of meningitis is largely influenced by the temperature chart, for prolonged pyrexia is always of bad import.

The diagnosis of meningitis is often one of extreme difficulty,

and when it has been recognized it is not always easy to determine the particular form of inflammation with which we have to deal. The difficulty of diagnosis and its importance is brought home to us, when we read that dreadful history of the witch mania which affected so large a part of Europe in the sixteenth century, and the neighborhood of Salem, in North America, in 1692. Many of the unfortunate victims who were first tortured, and then cruelly killed, were charged with "overlooking" children, who afterwards pined away and died, some rapidly within a few days, others after a lingering illness of weeks or months. Many of these children complained of pains in their heads, they became unconscious, were convulsed, and died. It is obvious from their histories that some of the children suffered either from general tuberculosis or from some form of meningitis. How much wanton cruelty would have been spared if our ancient brethren in the profession had been able to make a better diagnosis! We shall not fall under any shadow of this kind, yet an accurate knowledge of the nature of the disease is of the utmost importance, for it determines the prognosis, even if it does not materially influence our treatment.

**Sharp, Gordon:** **The Soil in Relation to Diphtheria.**  
(*British Medical Journal.* 1896. No. 1860.)

The author reports a long series of observations made to ascertain whether the soil from a place reputed for outbreaks of diphtheria differed from that of a district very similar in every way, but free from visitations of diphtheria. He reaches the following conclusions:

1. Diphtheria would appear to be endemic in certain districts. Soils organically laden are dangerous, but much may depend on the nature of the subsoil. Where the subsoil is porous, a neighborhood may be free. Where the subsoil is impervious, the surface at certain seasons of the year may be a favorable breeding-ground.

2. Soils which would otherwise be sources of the spread of diphtheria, are rendered innocuous by deep drainage.

3. The presence of a large quantity of air in the surface soil appears to be salutary, and the contrary holds. However, this may be an accidental circumstance.

The close connection between enteric fever, scarlatina and



diphtheria has often been remarked, and Bond has especially called attention to the close relationship between scarlatina and diphtheria, and formerly the connection seems to have been even more marked. Thorne has called attention to the fact that as authorities have improved their water supply, enteric fever has declined in frequency, while under the same conditions, and with improved sewerage systems, diphtheria has increased. Immersion in water for a short time seems fatal to the microbe of diphtheria, while the contrary holds with regard to the organism of enteric fever; both seem to live in sewage. A moist rather than a water-laden soil seems to be the home of the organism of diphtheria.

**Chapman, Charles W.: Prognosis of Heart Disease in Children.** (*Lancet.* 1896. No. 3798.)

Difficult as it most generally is to forecast the issue of a case of heart disease, the anxious parent expects to be told when and how far the child may recover, and, if recovery is impossible, the probable duration of life. It behooves us, therefore, to answer these questions as far as possible. A diagnosis having been made of the physical condition of the heart, what are the data on which to form our prognosis? 1. If the cardiac disease was caused by a single attack of rheumatic fever, how long is it since the attack, and what has the health been in the interval? 2. If there have been two or more rheumatic attacks, at what intervals have they occurred? 3. The family history. 4. What is the condition of the patient as regards general nutrition? 5. Is there good compensation, or commencing or even advanced failure? 6. If there is heart failure, is it recent, or only a stage further on the downward course? The condition of the heart, lungs, liver and kidneys will help materially in answering this question. 7. Œdema of the ankles.

Accuracy of diagnosis should always be aimed at, and in many cases repeated examinations are required to attain this object. If a long time—say, five or more years—has elapsed since the heart affection began, we are able to judge how far the heart and circulation have accommodated themselves to the altered condition and from the way the heart has borne the strain to form some idea how it will bear it in the future. Frequent recurrence of rheumatism at short intervals is always a

bad sign. The extent of dilatation will be an index of the healthiness or otherwise of the myocardium and the muscular power by the regularity and strength of the heart's action, and its efficiency as a pump may be gauged by the condition of the pulse and other signs. Aortic stenosis of moderate extent is the least serious condition ; the amount of hypertrophy of the left ventricle will be a guide to its extent. Aortic regurgitation may be so far compensated for as to render its existence but little bar to the enjoyment of life, although patients so affected cannot expect length of days. Anything which provokes dilatation brings the case a stage nearer the fatal issue, besides which fatal failure of the heart may occur any time.

#### HYGIENE AND THERAPEUTICS.

**Kerley, Charles G.:** **Treatment of Pertussis.** (*New York Polyclinic.* 1896. Vol. viii. No. 2.)

During an epidemic of pertussis in the New York Infant Asylum, the systematic use of drugs was carried out after the following manner:

The new cases of pertussis as they came down were divided into groups of twenty. They were all carefully watched. The nurses and mothers were instructed to keep a record of the number and severity of the paroxysms day and night. When the disease reached the height of the paroxysmal stage, treatment was begun. But one drug was given to each group of twenty, and it was not changed until it was possible to judge of its effects. The number of coughing paroxysms of each child were accurately kept after the beginning of treatment, in order that it might be known what impression the drug made on the disease. In this manner antipyrin, the bromides, belladonna, alum, dilute nitric acid, fluid extract of horse chestnut leaves, and the cresolene lamp were brought into use.

The antipyrin, bromides, and belladonna were each used in several groups of twenty as there was an abundance of material. The ages of the cases treated varied from six weeks to five years. They were of every condition of bodily strength and weakness. To the best of the author's judgment, the duration of an attack was not shortened in a single instance. The average time in the quarantine was ten weeks; the range was from four weeks to

four months. The cases of short duration, from four to six weeks, were as severe or more severe than those which coughed for months. These cases ceased coughing not on account of the treatment but because the disease had run its course.

Antipyrin gave the best results. Under its use the number and severity of the paroxysms subsided. A combination of the bromides of soda, potash, and ammonia came next. The much vaunted belladonna appeared to exert little or no influence. It was given to the point of physiological effect. Alum gave practically negative results. Dilute nitric acid and fluid extract of horse chestnut leaves were utter failures.

The results in a few cases in which antipyrin was used were notably good. The number of paroxysms diminished one-half in some, one-third in others. It was interesting to note, also, the difference in the manner of improvement. In some the number of paroxysms would be lessened while in others the number remained unchanged with marked amelioration in the severity. During this epidemic and the four years that have intervened, the writer has given antipyrin freely in this affection, and has had no accidents or unpleasant results; never a sign of depression. A slight rash resulted but once. A combination of antipyrin and the bromides gave better results than when administered singly. The combination of the two drugs, antipyrin and bromide of soda, was accordingly adopted as the method of treatment.

For a child of eight months,  $\frac{1}{2}$  grain of antipyrin with 2 grains of the bromide of soda may be given every two hours. For a child of fifteen months, 1 grain of antipyrin with  $2\frac{1}{2}$  grains of bromide of soda every two hours. For a child from two and a half years to four years, 2 grains of antipyrin with 2 to 3 grains of bromide of soda every two hours.

During the past three years the author used both bromoform and quinine in a large number of cases. These cases were either private or dispensary patients in whom absolutely accurate observations were not to be made. Judging from the results obtained, however, bromoform, which was a fashionable pertussis specific at that time, proved to be of little service. In the first three cases in which it was used it appeared to exert a most decided influence in shortening the course of the disease. Upon further use, however, it went to the wall, and there it occupies a space to-day among many other so-called pertussis specifics,



Not so with quinine. In this we have a very useful remedy but the author has been obliged, unfortunately, to limit the use of it to children over two years of age.

It must be given in large doses to be effective, at least ten grains daily being required for a child from three to five years of age. There are numerous objections to its use which render it on the whole an undesirable means of treatment. Parents object to the child taking such large doses and fail to give it. It is difficult to administer it frequently to young children; even when swallowed, it is frequently vomited, and it not unfrequently produces unpleasant complications.

An important factor in the management of the winter cases, which is never mentioned in our text-books, is the desirability of changing the sick room. A child with an infectious disease, no matter whether it be pertussis, scarlet fever, or measles, should not be kept constantly in one room. The room and the complete outfit should be changed every two days. There should be an entire change of clothing and bedding for attendants and patient. The walls and floor of the room should be thoroughly washed, and the room aired for at least twenty-four hours.

**Jackson, Henry: Treatment of Scarlet Fever with Anti-streptococcic Serum.** (*Boston Medical Journal.* 1896. Vol. cxxv. No. 9.)

Marmorek has used anti-streptococcic serum in scarlet fever. His reasons are that, though the etiological factor in scarlet fever is unknown, the severe complications, as otitis purulenta, nephritis, endocarditis, and pseudo-membranous angina are due to the streptococcus. Scarlet fever without these dangerous complications would not be a serious disease.

One hundred and three cases entered the hospital, but seven were not treated. In ninety-six cases, a serum of 1-30,000 was used in doses of 10 c. c. In all the cases streptococci were found; seventeen were complicated with diphtheria, and were treated with the double serum, four being fatal; 10 c. c. of serum were injected daily till the temperature fell, or if complications arose. The most marked effect was in cases with enlarged glands, nineteen cases occurring without suppuration. There was one case of mild otitis; four entered with otitis, but rapidly recovered.



Baginsky made use of serum supplied by Marmorek, and gives the following letter from Roux as to the serum: "Nothing authorizes you to consider that the serum has any efficacy in the scarlet fever itself; but a certain number of observations permit us to believe that it has a favorable influence on the complications due to the streptococcus, so common in scarlet fever."

Baginsky treated forty-eight cases; several had enlarged glands which went on to suppuration. The mortality was 14 per cent.; previous mortality 22-30 per cent. Baginsky, in *résumé* merely says that the results were not more unfavorable than in previous years.

Of 646 cases at the Boston City Hospital, the mortality was 63, or 9.4 per cent.

**Emmerich : The Abuse of Alcohol in Children.** (*Archives f. Kinderheilkunde.* 1896. B. xx., H. iii., iv.)

The author cites several instances of the abuse of alcohol in the young, in all of which the well-known effects in excess left its mark upon the individual. He believes alcohol to be absolutely unnecessary, so far as the nourishment of a child is concerned. From its use indigestion and cirrhosis of the liver frequently result. It is, through disturbance of the central nervous system, a factor of considerable importance in causing convulsions, epilepsy, and chorea. He believes that alcohol may be given with benefit in sudden heart failure, in infectious diseases and in collapse when it is the *résultat* of a severe gastric catarrh and after severe hemorrhage. It may also be of use in certain cases of malnutrition, rickets, and tuberculosis. Here it furnishes animal heat, and prevents destruction of tissue.

**Eisendrath : The Effects of Ether and Chloroform on the Kidneys.** (*Archives f. Kinderheilkunde.* 1896. B. xx., H. iii., iv.)

The observations cover the examination of 130 patients before and after ether and chloroform narcosis. Seventy were given chloroform and sixty ether. The author's conclusions are as follows:

In cases of albuminuria, the amount of albumin will be increased more after ether than after chloroform, in the proportion

of thirty-two to twenty-five. The result was the same in the cases of amyloid kidney.

Casts with or without albumin appear in equal frequency, independent of the anæsthetic, but disappear more rapidly. In children the changes were less marked than in adults.

**Roos: The Treatment of Croup with Mercurial Ointment.**  
(*Jahrbuch f. Kinderheilkunde.* B. xlii., H. iii., iv.)

The patient, a boy six years old, was suffering severely with dyspnœa. The author rubbed into the skin twelve grains of blue ointment, one-third of which was quick silver. The result was surprising. In a few minutes the dyspnœa subsided and the child breathed without difficulty.

In five other cases the author has seen as good results. There was never more than two rubbings required. He reports a case in a child three years of age, in which there had been severe dyspnœa for four and one-half hours. Ten grains of the ointment were rubbed into the skin. The croup subsided in ten minutes. In one hour and a quarter it again appeared but was effectively controlled by five grains of the salve.

In troublesome cases in which a treatment is necessary every day, a bath should precede the rubbing. There were no symptoms of poisoning in any of the cases. They were pure idiopathic croup, not diphtheria. Plain croup is differentiated from diphtheria by the absence of signs of a general infection.

**Preston, J. W.: Juvenile Case of Stramonium Poisoning.**  
(*Virginia Medical Monthly.* Vol. xxii. No. 6.)

When first seen, the patient, a boy aged fourteen months, was suffering from slight symptoms of gastric distress, pulse rather full, and face slightly flushed.

Seen an hour later as he lay in his mother's arms, a glance was sufficient to indicate that his case was critical. His face and neck were covered with scarlatiniform blotches; eyes staring with widely dilated pupils; pulse very quick, inclining to grow weak; respiration hurried and irregular; abdomen distended. His arms were in constant motion as though he would clutch some imaginary substance in the air. His mental condition seemed that of marked and complete delirium, rather otherwise

than painful, so that upon the whole he presented a picture, to one uninterested, pitiable yet ludicrous.

After a persistent effort with mustard, ipecac, and sulphate of zinc, his stomach was evacuated. The number of stramonium seeds ejected, proved beyond a doubt that he had eaten to repletion. A brisk purgative being at once given, a considerable quantity of seed was expelled from the bowels, after which a small quantity of brandy, together with an occasional sprinkling of cold water in his face, sufficed to keep the circulation and respiration in fair condition till the effects of the poison already absorbed passed off.

Treating him from a symptomatic standpoint, in the writer's opinion, opium was contraindicated, for the most notable symptom in the sequel was an irresistible desire to sleep for the ensuing six hours.

## SURGERY.

**Haynes, Irving S.: The Early Diagnosis of Tubercular Disease of the Joints in Children.** (*New York State Medical Reporter.* 1896. Vol. iii. No. 8.)

In making a diagnosis where tubercular joint disease is suspected, the child should be stripped and a thorough general examination should be made for signs of tuberculosis in the lungs or other organs.

Disease in the cervical region gives a condition of spurious wry neck; pain is felt in the occipital region, side of neck, over the clavicle, upper part of the chest, or in the arm; rotary or nodding motions of the head will be checked if the disease is confined to the two upper vertebræ, and motions of extension, anterior and lateral flexions be diminished if the disease is in the remaining cervical vertebræ. In the dorsal region there is the attitude of "square shoulders," a grunting respiration, with limitation of motion in the spine. Lumbar disease is the plainest to detect. The position is one of lordosis; the pain is in front and is often treated as colic; psoas contraction may be present; limitation of motion will be present and its location exactly determined.

The old methods sometimes used and now and then found recommended in text-books, are mentioned only to be condemned. The plan of detecting a tender spot in the spine by jarring it, as



in striking the soles of the feet, having the child raise up on his toes and then drop suddenly onto his heels, or of having him jump down from a chair to the floor, or lifting the child up by the arms and then dropping him to his feet should never be done. Neither should the examiner place his hand upon the child's head and bear downwards. These are brutal methods. They not only may do great damage to the already diseased spine, but they hurt the patient, throw all his muscles on the guard, limit entirely or to a great extent the motions in the spine, and so defeat our examination. Do not percuss or press *serratim* upon the spine in the hope of finding the diseased vertebra by the tenderness elicited; you will probably find as many tender spots as there are spines pressed upon. Gentle pressure upon the spines to determine if they are in the same line with each other is valuable, but such examination should be gentle. The only sure test is found in determining the presence or absence of limitation of motion. For a single symptom you can pin your faith to this.

*Injury of the spine* by direct or indirect violence gives acute symptoms, which pass off in a week or two of rest in bed. The motions may be slightly arrested, but usually only in one direct direction, while in tubercular disease limitation of motion is in all directions. In many cases the tubercular disease follows spinal injury; consequently, if the recovery is slow, examine carefully for such disease.

*Rheumatism of the back* is not a disease of childhood; if present, the normal motions of the spine will exist in some direction. There is the absence of all attending symptoms of position, attitude, and history. *Growing pains* do not exist.

*Hysterical spine* will give you the most trouble. Though this affection is usually found in young females, it may occur in children. The true state of affairs can be arrived at by exclusion. There is nothing typical on close examination. The pain is felt in the back, at many points; it will shift during the course of an ordinary examination. Limitation of motion is under the child's control, hence it will vary at times, the whole spine being held rigid, then sections of it. The whole matter is overdone.

*Croup, or mouth-breathing, or dysphagia*, from post-pharyngeal abscess, will be differentiated from the other causes of these symptoms by inspection of the throat. Post-pharyngeal



abscess in the majority of cases is due to cervical Pott's disease.

*The grunting respiration* in dorsal disease is distinct from the wheezing of asthma. A physical examination will exclude pleurisy, aneurism, mediastinal growths, and abscess.

*Intercostal neuralgia* will not be accompanied with limitation of motion in the dorsal region.

*In true wry neck* the range of motion is free in all directions except the one particular one limited by the muscular contraction. There is no true muscular spasm. The long standing of the case and the absence of tubercular inheritance and history exclude tubercular disease.

*A rachitic spine* gives restricted motion, but cannot be confounded with Pott's disease, as there are other symptoms. The curve in the back is a long one, extending from the upper dorsal to the lower lumbar region. It is caused by the child sitting in a stooping position for a long time. Lateral mobility is free; extension is free, but not to the normal degree, and is limited throughout, and not at one particular segment of the spine. There are the absence of the particular pains; the child has no pain at all. The appearance is that of a rachitic child, and not the tubercular one. There is the large, square head, and the enlarged epiphyses at the wrists, along the costochondral articulations, and at the ankles.

**Smith, Noble: Congenital Lateral Curvature.** (*Clinical Sketches.* Vol. ii. No. 9.)

Regarding this very rare condition, the author mentions the following features for diagnosis:

(1) The deflection at the seat of deformity is more abrupt than in acquired lateral curvature. The position of the spinous process of the third dorsal vertebra is very much more to the left than that of the second.

(2) The absence of the continuation of the arch of this vertebra on the left side would also probably have attracted attention.

(3) There is an absence of rotation of the vertebræ in this part of the spine.

(4) The line of the spinous processes below the malformed part is more like the common curve of *acquired* deformity, and probably in this case it *was acquired* to compensate for the congenital curve; but it is peculiar in that the spinous processes

project towards the convexity of the curve instead of towards the concavity, the latter being the case in ordinary lateral curvature.

**Kellock, T. H.: Intubation versus Tracheotomy.** (*Lancet.* 1896. No. 3814.)

After reviewing at considerable length the advantages and disadvantages of the two operations, the author concludes that intubation, when combined with the injection of antitoxin serum, has the following advantages over tracheotomy in diphtheria: (1) The operation can be performed more rapidly, and with less assistance; (2) it does not need an anæsthetic; (3) the tube can be removed at an early date, leaving no wound and no passage for the respired air except *per vias naturales*; (4) it does not necessitate the patients being kept at any time in an artificially warmed and moistened atmosphere, and obviates the dangers to the lungs of unfiltered air being breathed straight in; and (5) it can be employed in cases where parents or friends refuse leave for the "cutting operation."

**Cassel: Gonorrhœa in Little Girls.** (*Archives f. Kinderheilkunde.* B. xx., H. iii., iv.)

Thirty cases of vulvo-vaginitis came under the author's observation. In twenty-four the gonococcus of Nissar was found in the secretion. The ages of the patients in whom the gonococcus was present are as follows: One was seven months of age; one, one year; one, eighteen months; six, two years; four were from two to three years; six were three years; one was four and three-quarters years; one was five years; three were between six and seven years; two were between eight and eleven.

Investigation as to the manner of infection was without result in ten. Usually the children were indirectly infected by some member of the immediate family through the means of unclean towels and soiled clothing. In each case there was a secretion of yellow-greenish pus from the genitals. The duration varied greatly. In some the course was very short. In others the discharge continued for months. The treatment adopted was absolute cleanliness, with the injection of very weak sublimate or nitrate of silver solution.

**Carpenter, Alfred C.: Abdominal Section Performed Successfully on an Infant.** (*Medical Record.* 1896. Vol. xlix. No. 23.)

The patient was a male infant two months old. The abdomen was greatly distended; the temperature was 102.4°. Swelling of the abdomen had been noticed since the child was three weeks old, but had enormously increased for two days. The diagnosis of chronic intussusception was made. Upon opening the abdomen the diagnosis was confirmed and the bowel was reduced. An uninterrupted recovery followed.

**Burr, Charles W.: Pseudo-Paralyses of Childhood.** (*University Medical Magazine.* 1896. Vol. xiii, No. 7.)

The author in this paper presents a short study of certain types of muscular weakness occurring in children and simulating palsy, but not caused by disease of the nervous system. Mothers often give a history which as far as it goes is true, but which may completely mislead one as to the nature of the case. One will be told that a nursing infant has suddenly lost power in an arm or leg, or that a child has never walked and is palsied in the legs. Examination of the patient for the physical signs which always accompany true palsies will fail to find them. Further examination will reveal some general constitutional disease, most frequently rickets or syphilis.

The author presented as an example, a four year old negro boy, who was unable to walk, and was said to be paralyzed. He was unable to support himself by a chair but while sitting in the mother's lap would weakly kick and move the toes. Sensation was perfect; the knee-jerk was present but sluggish. There was no muscular atrophy or rigidity, and the muscles reacted normally to electricity. The legs hung flail-like from the body as the child was lifted up. The weakness, however, was not strictly localized. The child could indeed, move fingers and arms, but not against even the slightest resistance. His grip was weaker than that of a suckling. The explanation of the mother's error was simple. She forgot that legs have harder work to do than arms and noticed only his very patent inability to walk. We have then a case of pseudo-paraplegia due entirely to muscular weakness, bad development of the bones, and relaxation of the ligaments. In a case as plain as this, with such



evident signs, the diagnosis is easily made. But cases are not always so typical. There may be considerable muscular weakness with but slight evidence of disease of the bones.

Infantile spinal palsy can be immediately excluded, for it comes on acutely, with moderate fever and rapidly increasing palsy, which, receding, leaves greater or less loss of power in one or more extremities. If there is no history, examination alone will suffice, since in the late stage of infantile palsy there is local wasting, alteration in the electrical reaction of the muscles, and abolition of the deep reflexes. In Pott's disease there is the evidence of local bone disease in the spine, and according to its location a spastic or a flaccid palsy with it, if the case be severe, anæsthesia and more or less palsy of the bladder and rectum.

Syphilitic pseudo-palsy will repay a little study. It was carefully studied by the French physician, Parrot, who, in 1886, published a work in which he maintained that rickets was the ultimate phase of syphilis. This view has not been generally accepted, and the most valuable thing in the book is his description of the changes which occur in the bones, especially the heads of the long bones, of syphilitic infants, resulting in separation of the epiphyses from the diaphyses and consequent helplessness of the extremity. The clinical history of the disease varies with the number of bones seriously involved. Thus there may be an apparent palsy of only one arm, or of both legs, or of all four extremities. For example, a child is successfully born, and after from three weeks to three months—for Parrot's disease is ordinarily an affection of early infancy, during which time the child may or may not show signs of infection—the mother notices that it has ceased, suddenly it may be, to use one arm. On examination the arm hangs motionless as if broken. Sensation is normal. There is no wasting. The muscles react well to electricity. There is pain in the affected area on passive motion, and perhaps crepitus may be felt. If there is a collection of pus, swelling, and other local signs will be present. The diagnosis is not difficult unless one is misled by the history of a sudden loss of power which will suggest palsy, or by the presence of crepitus which may make one suspect the child has suffered some injury from without. Still more misleading are the cases in which one extremity after the other becomes affected as the bone-disease becomes more advanced, leaving the child powerless, the arms lying pronated by the side, and the legs stretching straight downward like two sticks, and when the infant is lifted up, swaying loosely back and forth. The total absence, however, of all the correlated signs of palsy, the presence of distinct bone-disease, and the existence of syphilis suffice for the diagnosis. Parrot regarded the condition as necessarily fatal, but in recent years cases have been reported which, under proper treatment, recovered.



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## Original Communications.

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### THE TREATMENT OF TYPHOID FEVER IN CHILDREN.

BY F. GORDON MORRILL, M.D.,

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In writing about the treatment of enteric fever in children, it seems hardly worth while to devote much time to the desirability of air space, ventilation, maintaining a moderate temperature ( $65^{\circ}$ – $70^{\circ}$  F.), changing the patient's position in bed (children are apt to move about without much suggestion or assistance), strict cleanliness, and such other details as are matters of common knowledge and acceptance. I shall therefore confine my paper to questions of nourishment, drugs, and the best means of ensuring the safety of those who are exposed, directly or indirectly, to the infection.

There can be no doubt of the necessity of adequate feeding, whether the case is that of an adult or child; and experience has therefore proved that milk is the safest and most convenient form of nourishment, as well as the most grateful to the child, whose anorexia is complete, but whose thirst is, fortunately, great, during the acute stage of the fever. It should be given every two or three hours in three or four ounce portions (less to very young children), and it is seldom necessary to dilute it, unless during temporary attacks of nausea or vomiting (common enough in typhoid), when the addition of lime water or Vichy, and the administration in small but frequently repeated doses are indicated.

Sleep is often disturbed, and advantage should be taken of the fact to give milk during the night as well as the day. In this way a child five years old will take from eighteen to thirty ounces in twenty-four hours, and older ones in proportion, up to fifty ounces, which seems to be about the average limit of their capacity. Should nausea and vomiting be persistent, in

spite of the measures described above, withdrawing the milk entirely, and substituting egg albumen water in teaspoonful doses (to which a few drops of brandy may be added), seldom fails to promptly relieve a trouble which, as a rule, lasts a day or two only at the most.

In cases where there is any marked degree of prostration, stimulants are of the greatest value, and their immediate effect on the pulse and general condition of the child, is pleasant to witness. Brandy in drachm doses *ter in die*, is often sufficient for a child, although I have known eight times this amount to be given in twenty-four hours. I believe that a majority of all children with typhoid fever are distinctly benefited by the judicious use of alcohol; and of forty odd cases which entered my wards during the past autumn, seventy per cent. were given brandy in amounts varying from one drachm three times a day to two drachms every two hours, at some period of the attack. The largest quantity was given during the acute stage of a second relapse, and the patient recovered.

Cold water is often craved and may be given pretty freely in cases where an ordinary quantity of milk fails to quench the thirst; but if there is the slightest difficulty in adequately nourishing the child, thirst must not be *wasted* in this way—the milk is to be insisted on.

During the acute stage of the fever there is less danger of digestive trouble if a milk diet is rigidly adhered to; but as soon as the temperature becomes normal, or assumes a low range, or sharp morning remissions, together with the patient's improved aspect signal the speedy attainment of convalescence, some predigested form of starchy food and Somatose (which I have used with beneficial results in a number of cases), should be added to the diet. The liability to reinfection must be borne in mind (seventeen per cent. of one hundred recorded cases at the Children's Hospital have had relapses), and whether the patient's improvement is followed by recovery, or merely precedes a few days which intervene between it and a relapse, an increase of nourishment in proper form will hasten the advent of health, or get the child in better condition to stand a fresh siege. When convalescence (slow and tedious in the mildest cases), is fairly established, a diet appropriate to the age of the child may be safely prescribed, and its ravenous appetite nearly, if not quite satisfied.

I have never seen the Brand method employed, and have had no experience in any special form of medication in the enteric fever of childhood, which tends to recovery, and runs a very close second to frank pneumonia, as a paradox, when its results are compared with those of the same disease in adults.

In the early stage, if there is constipation, calomel, both as a purge and intestinal disinfectant may be given. It can cause no mischief (even in the massive European dose), and may be safely used. One tenth of a grain every hour is usually enough to produce a result in eight or ten hours. Should the bowels remain inactive after a first thorough evacuation, glycerine enemata may be given every other day. If diarrhœa is present in the early stage, calomel may still be given before employing other remedies to check the trouble, which, so far as I have observed, yields more readily to salicylate of bismuth in five or ten grain doses than to any other drug which does not contain opium.

To reduce a high temperature which is poorly borne, cool bathing may be employed; but the results are very temporary, and the average drop in the temperature ( $1.5^{\circ}$  F.), hardly compensates for the extra work involved. Occasional doses of lactophenin or pepsol (three to eight grains) are very effective, and do no harm, so far as my experience goes, in any case where there are not obvious contra-indications to their use. Lactophenin will produce an average drop of  $3.5^{\circ}$  F. in four hours, and pepsol one of  $4.5^{\circ}$  F. in three hours, when given in similar amounts. These figures are taken from careful records of the temperature in sixty-five instances in which the drugs were used. Restful sleep may often be obtained in this way. Children vary widely in their ability to bear hyperpyrexia, and on several occasions I have observed one with a rectal temperature of  $105^{\circ}$  F. sitting up in bed and amusing itself with books or toys.

When the first sound of the heart is soft, and alcohol fails to regulate a weak or irregular pulse, digitalis is most useful. When disturbed sleep is not due to a high temperature, a five grain dose of trional acts admirably well as a hypnotic. Aside from the remedies above mentioned I have found little use for drugs in average cases.

The most frequent serious complication which one is called upon to treat, is that which results from the intestinal lesions failing to absorb as is customary. Hemorrhage in a child varies from very slight loss of blood with each discharge, which may



continue for days, to copious and fatal bleeding of which the thermometer may give no warning whatever. In case of any considerable hemorrhage, the foot of the bed must be raised, ice-bags applied to the abdomen, and gallic acid, opium and lead given by the mouth, or ergotin by hypodermic injection. Injections of a normal salt solution into the cellular tissue may also be tried where marked prostration and anæmia are observed. Perforation, if in a position to cause general peritonitis, is fatal, and nothing more than a free exhibition of opium is indicated, unless some bold surgeon can be induced to do a laparotomy. Bed sores are rare and easily prevented. They would be far more common, as would hypostatic congestion of the lungs, if children did not frequently change position of their own accord.

Acute delirium is rare, but forcible restraint, or a "reminder" in the form of securing one or both hands to the frame of the bed, are occasionally required. Ominous nervous symptoms (strabismus, somnolence, retraction of the head, intense cephalalgia), appear in rare instances, and often vanish so promptly as to preclude the possibility of their having been due to organic changes. Mental disturbances almost invariably tend to entirely disappear, and call for no special advice or treatment. Retention of urine is rare, but daily percussion of the supra-pubic region should never be omitted in cases where there is any suspicion of a lack of intelligence or care on the part of the attendants.

*Prophylaxis.*—Diapers and bed linen must be carefully looked after. They should be soaked in a 1 to 40 solution of carbolic acid for six hours, then boiled, and washed in vessels kept especially for this purpose. Discharges which are received in bed pans, are to be covered with a 1 to 20 solution of carbolic acid, and after being thoroughly broken up, are to stand twenty minutes before being emptied. The hopper and bowl of the closet should be washed in 1 to 20 solution daily. The nates should be carefully wiped with a 1 to 40 solution after each discharge, and the cloths with which this is done treated in the same way as the diapers. Rubber covers should be placed under the sheet on which the patient lies, and carefully washed off with a 1 to 20 solution if it becomes soiled. Thermometers should be carefully disinfected as well as washed each time the temperature is taken. The attendants should refrain from eating or drinking while in the immediate vicinity of the patient, and should wash their hands and use a nail brush several times a



day. The remains of food or drink which are brought from the sick room should be thrown away, and all eating utensils washed in a 1 to 40 solution of carbolic, then immersed in boiling water, before they are allowed to return to ordinary use. All articles of clothing which come in contact with the patient must be disinfected and washed apart from those of other members of the household. Mattresses should be aired in the sun for several hours daily, for a week after the patient recovers. When one reflects upon the infinite variety of ways in which typhoid bacilli may be carried (furniture, food, drink, utensils of all sorts, and in the air itself under certain conditions), it is a matter of surprise that the disease is not more prevalent—as it doubtless would be if the micro-organism (like that of diphtheria), did not require a special soil in which to flourish and prove its virulence.

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**A Hospital in the Home.**—In the *Practitioner* for September, Dr. Malcolm A. Morris, of London, favors the proposition that in planning a house, regard shall be had for the future needs of the occupants in the time of sickness. His recommendation is that one room should be set apart in design as the sick-room. This room should be shut off as much as may be from the common atmosphere and common noises of the dwelling—or, rather, it should be so arranged that it can be shut off at any time—and there should be a bathroom and water-closet close at hand. The walls and floors and other surfaces should be impervious, so as to harbor no impurities, and to admit of ready cleansing, and the furniture and fittings should be simple, with the same object. If in addition there should be a second room available for the nurse's use, the essentials for the proper seclusion of infectious cases are provided, as far as possible, in a private house. A miniature hospital is then ready at hand, and at ordinary times it can serve as a spare room, or even as a bedroom in regular use, differing only from any other room in its adaptability to the special purpose in question. This plan should be especially welcome to the paterfamilias in whom the home feeling is active, and whose olive branches sprout out thick and fast. To such a one the little private ward may be a positive and blessed economy in saving the doctor's bills that are apt to pile up where the children's diseases—as they are improperly called—take a run through the family. This incentive is apart from the higher economy that may also take place, namely, the saving of the lives of some of the juniors of the family.—*Journal, American Medical Association.*

## ACUTE INFANTILE SPINAL PARALYSIS.\*

BY FRANK E. PECKHAM, M.D.,

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In treating this subject your attention will be called especially to the clinical picture of the disease and to the deformities which may result. As the name implies it is a disease of childhood and is in fact the most common form of paralysis to which children are subject. It may occur at any age, but is most frequent in the first ten years of life.

Most authors consider that there are no good grounds for believing it has developed in utero, but Sinkler states that "there is little doubt that a considerable number of cases are congenital" and Dr. T. G. Morton states that most cases of congenital club-foot are caused by intra-uterine paralysis.

Personally I have seen several cases which I believe to be infantile paralyses developed in utero. A case which came under my care in 1893 was Miss H., aet. 16 years. The child was born with both feet deformed, the right foot being in the position of talipes equinus and the left foot in that of talipes equinovarus. The muscles were markedly atrophied and reflexes absent. This case will be reported more at length in speaking of deformities.

All authors quote Duchenne's case which occurred at the twelfth day after birth as being the only case at so young an age. In the first ten years of life it attacks either sex, but after ten, Gowers states, it is practically confined to the male sex.

Usually the family history fails to reveal any similar trouble. Some of the cases develop during convalescence from the acute diseases of childhood, as measles, scarlet fever, whooping cough, pneumonia, etc., but it is doubtful if it is anything more than coincidence. Healthy children are just as likely to be attacked and often it seems as if it was almost characteristic of the disease to pick out a perfectly healthy child. One very striking fact is that the great majority of cases develop during the hot months. The reason may be that children, ever active, over-exert more

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\*Read before the Providence Medical Improvement Club, October 21, 1895.

easily at a time when they are the least hampered with clothing; also get over-heated more readily and then are extremely liable to cool off in the most rapid way, resulting in a sudden chilling of the body. Long exposure to heat or cold is supposed to have an influence in predisposing to the disease.

Some authors are inclined to include teething as one of the causes, but aside from the fact that the nervous system is much irritated at this time, there is probably no connection, and Gowers states that "the disease occurs before and after the period of teething and it exhibits no increase in frequency at the period of the second dentition."

There are several types of the disease which will be considered. A child may go to bed at night apparently in perfect health and when it gets up in the morning one leg is paralyzed. There is no pain. The child limps with one leg and examination shows the knee jerk absent, and muscular atrophy follows in a short time. Again, a child may be at play or walking around when suddenly it falls and is unable to stand again. Examination reveals a group or groups of muscles paralyzed. I have seen several cases of this class during the summer. To illustrate with a single case:

A little girl three years of age was brought to the Rhode Island Hospital, because she was walking lame with the left leg. There was no pain. The child was in perfect condition in every other way. The mother had been told it was hip disease. Examination showed the knee jerk absent with considerable muscular atrophy, there being a difference of over one-fourth of an inch in the circumference of the legs.

A second type is the congenital type previously referred to. Another type has an acute onset, the child being very restless and fretful with fever and headache. There is usually vomiting and occasionally diarrhœa. There may be a convulsion but it is usually of short duration. The child cries out whenever moved, reminding one of the same symptom in rhachitis. When lying prostrate the head may be retracted as in cerebro-spinal meningitis. In some cases the pain and tenderness are very marked. The pain may be referred to the muscles and joints or may be general all over the body with severe headache and backache. Manipulation of the limbs or of the spine causes pain, and apparently there is much tenderness, but there is entire absence of any stiffness or muscular contraction as observed in tuberculous



disease of the spine or joints. Another symptom which may be present is formication and this may be quite troublesome, the child continually asking the mother to rub or scratch the foot.

An illustrative case is L., aet. five years. In June, 1895, he was recovering from the whooping cough and during July was troubled with some bronchitis. On July 31st, as the family were on the way to Nantucket for a month's vacation, the boy began to walk lame with the right foot. That night he was hot and feverish, complaining of headache and general pain all over the body, including the joints. The next day he was unable to move the legs. The slightest motion caused a great deal of pain, so that the boy cried out. There was no vomiting and no convulsion. The acute stage lasted two weeks. During the third and fourth weeks there was some improvement in the paralysis. For a whole month the case was considered to be rheumatism.

I saw the boy for the first time on September 1, 1895. Both legs were then paralyzed, with marked muscular atrophy and knee jerks absent. He still complained of considerable pain in the shins and knees. The left foot was in a position of talipes equino-varus and could be corrected only by using considerable force and causing some pain. The right foot was in the same condition but was corrected much easier. The mother says that the knees were contracted but she had manipulated them until they were straight. The patient was able to move the left leg a very little but could not move the right leg at all. The arms were not affected. In every other way the physical condition was good; the appetite excellent; the bowels regular.

The paralysis in these cases usually manifests itself at once, but it may not develop until a few hours or a few days have elapsed. The muscles become markedly atrophied and the growth of the bone is interfered with. At times only a single group of muscles may be affected and, again, the attack may be so complete that the patient is unable to move at all, being completely helpless.

The disease ordinarily affects only the motor tracts, sensation not being impaired. The sphincters are not usually affected but in the rare cases where sensation is involved there is incontinence of urine.

The paralysis remains at its height for a few hours or days, up



to two or three months, when improvement begins. The recovery will be comparatively rapid at first, and during the first six months the most of it will have been obtained. After this a slow improvement may go on for years. When the upper extremities are involved they usually begin to improve first and the restoration may be complete, the permanent paralysis remaining in the lower extremities.

The resultant deformities depend upon the various groups of muscles affected. The permanent paralysis, when affecting an arm and a leg, usually involves one side of the body, but now and then the rare form is seen where the arm on one side and the leg of the opposite side is affected. Recovery in a very small number of cases may be complete but usually the result is a permanent paralysis in some of the muscles.

The diagnosis in a beginning acute infantile paralysis may be extremely difficult and even impossible, until some of its characteristic symptoms become more prominent as the disease progresses. In a typical case there is the sudden onset accompanied by motor paralysis, with marked atrophy and deformity following soon after.

The most important and most scientific test is the electrical reactions of the muscles.

In the early stages of an infantile paralysis the nerves supplied by the diseased cells are irritated and respond to both faradic and galvanic electricity more actively than when in a normal condition. This activity then gradually decreases and by the end of the first week there is no contraction to either form of electricity. On the other hand, when the muscle itself is stimulated there is a difference in the response to the two currents. When the faradic is used, the increased activity of the first day or two is the same, but this gradually disappears until there is no response whatever. When the galvanic current is used the reaction of degeneration gradually becomes established.

It may be well to notice a few of the diseases most commonly mistaken for infantile paralyses. In cerebral hemiplegia, convulsions occur more frequently and are usually prolonged, lasting several hours.

In infantile paralyses the convulsion is general, while in hemiplegia it is unilateral. In infantile paralyses the knee jerk is absent. In hemiplegia the knee jerk is exaggerated. The

muscles would respond to faradism in the latter while in the former they would not.

To illustrate with a case of hemiplegia.

(Fig. I.): E. P. T., male; when fourteen months of age was taken sick with a convulsion which lasted three hours, ether being necessary to control it. After the convulsion, a left-sided paralysis remained and child did not walk until three and one-half years of age.

The case was first brought to me in March, 1895, when the patient was nine years of age. The left leg was paralyzed and the foot was in the position of equino-varus as shown in the photograph. The boy walked with a spastic gait, dragging the



LEFT HEMIPLEGIA DUE TO ACUTE INFANTILE SPINAL PARALYSIS, BEFORE AND AFTER OPERATION.

left foot and wearing the toe of the shoe completely through in about three days. The knee jerk was exaggerated. The left arm was also paralyzed, with the elbow somewhat contracted, so that it was with difficulty he could put on his stocking. The left hand could not be used to hold a fork or spoon in eating. The muscles responded to faradism. Operation was performed March 19, 1895, Dr. George S. Mathews assisting. The plantar fascia and tendon Achilles were divided subcutaneously, and four weeks later a club-foot shoe was applied to hold the foot in proper position. The muscles have been treated with electricity every day since the apparatus was applied. The leg is now (six months after operation), in the condition shown in the photograph. The patient can use the leg very much better and can walk very well even without apparatus. The ability to use the

arm has also improved in equal degree. This improvement was obtained although treatment was not begun until more than seven years had elapsed since the initial lesion.

In myelitis there is a loss of sensation, and as the disease progresses the paralysis increases. In the early stage of an infantile paralysis with the head retracted and spine sensitive, it may be impossible to distinguish it from cerebro-spinal meningitis. In a meningitis, if there is effusion or pus formation, there may be paralysis; but with the subsidence of the acute stage, this paralysis would disappear, while in an infantile paralysis, when the acute symptoms subside, the paralysis becomes prominent.

In an acute infantile paralysis with pain and tenderness referred to the region about the joints it has been confounded with rheumatism as in the case reported, but a careful examination of the reflexes, together with the paralysis and electrical reactions should reveal the true nature of the disease.

Several cases have been brought to the hospital during the summer with one leg affected where it had been confused with hip disease. In hip disease, manipulation causes a spasmodic contraction of the muscles, while in infantile paralysis there is muscular relaxation. In hip disease, also, the leg is fixed by the irritated muscles and usually flexed.

As regards life, the prognosis in these cases is good. Death may occur in the acute stage, but the symptoms must be very severe and the respiratory muscles become involved. As regards paralysis there is a comparatively rapid improvement for the first few months followed for an indefinite time by a slow improvement. The first question the parents ask is, "What is the final result to be?" "Will my child always be paralyzed?"

A perfect recovery, except occasionally in the milder cases, cannot be hoped for, but it is also rare to see a case that you cannot promise improvement and in the majority of them a great deal of improvement.

The contracted muscles may be divided, their tonicity may be stimulated by electricity and massage, and apparatus may be applied in such a way as to prevent deformity; and it is possible for a child apparently bed-ridden to be put upon its feet and given the power to walk again. The electrical reactions will also aid very much in giving a prognosis.

In those muscles which react to faradism even if only slightly, there will be a return of power. If the reaction of degeneration



is marked, those muscles will remain permanently paralyzed, but if it is only slight, treatment faithfully persisted in may result in a great deal of improvement.

In the acute stage the treatment should be symptomatic. A hot bath and a good cathartic should be given, and if there is much pain salicylate of soda may be of value. The next step would be to relieve the congestion in the cord. Ergot seems to be the one drug which all authors are agreed upon as possibly being of some value. Next in importance is belladonna.

The bromides and iodides internally, and mercurials both internally and externally have all been employed, but medication is of doubtful utility. Later in the disease strychnine is of undoubted value. In the cervical and lumbar region, cups may be employed or ice applied. The patient should be kept as quiet as possible in bed and as soon as the paralysis is evident, the parts affected must be carefully supported in a correct position.

After the acute stage passes away, the same attention should be given to details in case there should be a relapse. At this time also a more active treatment is begun.

With the circulation and nerve supply impaired, the paralyzed limbs are always cold, so that the first thing of importance is to keep them warm. In the winter extra coverings of either flannel or woolen must be used and the limbs heated two or three times daily. A convenient way is to have the patient place one or both feet well inside the oven of the kitchen range and allow them to "bake."

It is perfectly surprising how much heat can be borne in this way and at the same time have the patient tell you it feels good,

According to Bradford and Lovett the application of dry heat "stimulates the circulation of the paralyzed limb and aids in its recovery by improving the nutrition of the muscles."

The most important treatment at this stage is probably the electrical, which should be begun as soon as the individual case will permit. Many of the muscles will respond, to a greater or less degree, to faradism, and wherever this condition exists, the faradic current should be used. When there is no response to the faradic, then the galvanic should be used, and when improvement results sufficiently for a return of the response to faradism, then that current should be used in preference to galvanism. It is better to use a slowly interrupted faradic current, and in using galvanism I think better results are obtained by using the inter-



rupter. Electricity stimulates the circulation and in consequence of contractions the nutrition is materially aided. Muscular tonicity is maintained to a greater or less degree, until restored power adds still more to the improvement.

Massage is also an important method of stimulating and toning up the muscles. This may be done by a professional when expense is no object, but any intelligent person can be taught to manipulate and knead the muscles sufficiently well. In connection with massage, the joints should be passively put through their normal motions, and just as soon as the improvement admits it, the child should be encouraged to use the muscles actively. Exercise may be arranged which will bring into use each muscle or group of muscles but never pushing it far enough to completely tire the patient.

After the massage and exercise the child should be allowed to lie down and rest or go to sleep for a short time; therefore, this is better done in the evening.

The limbs may be thoroughly heated in the oven, then massaged, manipulated and exercised, and the patient may go to bed and enjoy a night of refreshing sleep.

So many cases are allowed to go on to deformity that the treatment of them becomes important.

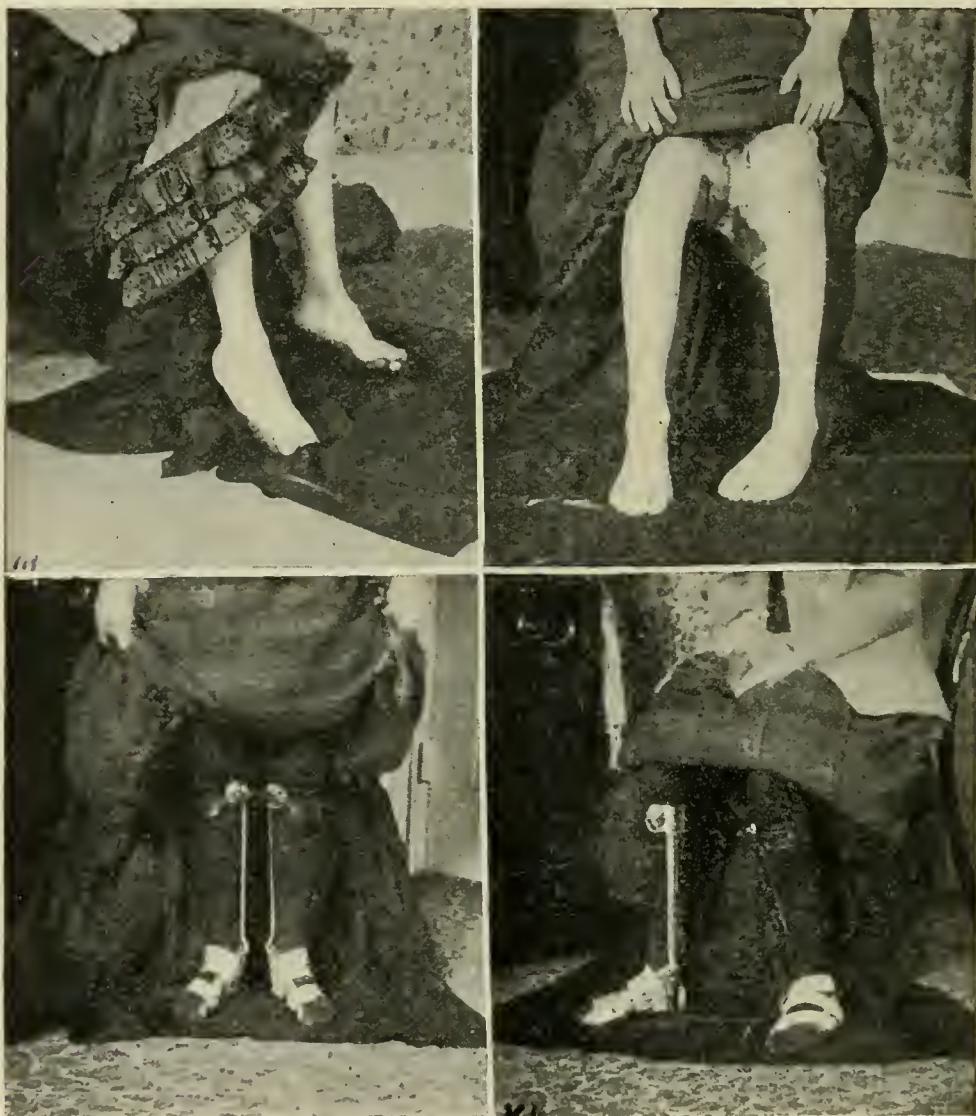
To discuss each particular one would require too much time and is not necessary for a general idea of methods of treatment. The most common deformity is perhaps in the foot, which may be in the position of talipes equino-varus or talipes valgus due to contracted muscles and shortened fasciæ.

In the first place it must be decided whether these shortened tendons are to be gradually stretched by manipulation and massage, or divided subcutaneously. Retention apparatus cannot be applied to the best mechanical advantage until this is accomplished or nearly so. If gradual stretching is depended upon, it will take a long time, the parents will be clamoring for a more rapid improvement and when finally the foot is straight, what is the result? For example, if it has been the tendon Achilles that has been stretched, when the foot is flexed to a right angle it brings up with a thud.

There is no elasticity left. It is all stretched out. On the other hand if the tendon is divided subcutaneously, there is almost no danger, the position of the foot is corrected at once without so much loss of time and the result is a more elastic

tendon to work with; hence it would seem that the best treatment from every point of view would be surgical.

The best form of apparatus for any of the inward deformities of the foot, as a varus or an equino-varus is probably the Taylor



CASE I. BEFORE OPERATION. RIGHT FOOT IN POSITION OF TALIPES EQUINUS. LEFT FOOT IN POSITION OF TALIPES EQUINO-VARUS. AFTER OPERATION, SHOWING APPARATUS APPLIED.

shoe or some modification of it. If the varus deformity should be very marked and the child quite young, the upright would have to be extended to the hip with a posterior arm. In the case of a talipes valgus a Taylor shoe could be used with an outside upright and if the arch of the foot was down, the inner side

of the metallic sole plate could be curved just like an ordinary flat foot plate.

The thigh muscles may be paralyzed so that the knee will not support the weight of the body. In this case, inside and outside uprights may be attached to the bottom of the shoe with leather straps over the knee to hold it. Occasionally the foot and knee are both affected. Then the club-foot shoe with the extension is used, with a locking joint at the knee. The paralysis may be more extensive still, and involve the muscles which support the hips, in which case the apparatus is extended still higher and a wide leather belt buckled around the pelvis and body. There is no general rule in the application of the apparatus but



CASE I. AFTER OPERATION, SHOWING THE PATIENT STANDING WITHOUT APPARATUS.

each deformity must be overcome and each mechanical problem solved as it arises.

I shall now report four cases of deformity resulting from infantile paralysis, showing the methods of treatment and the results.

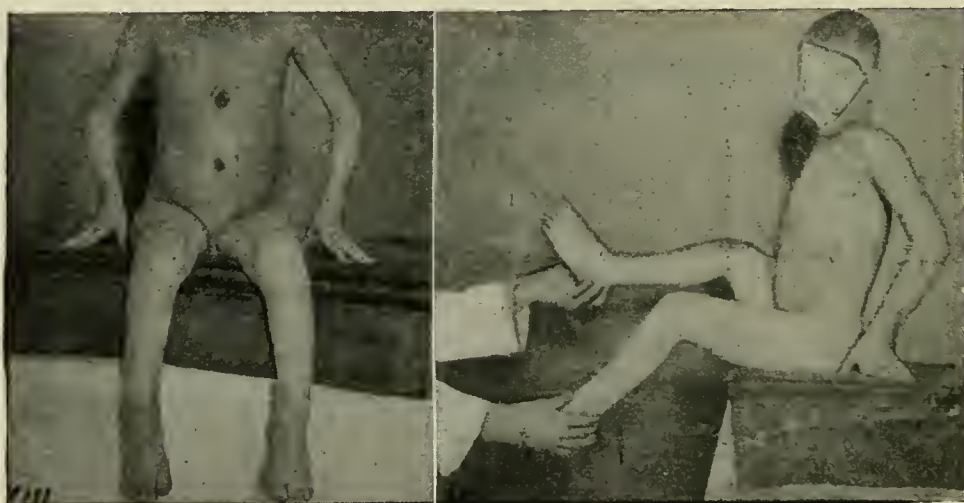
CASE I.—This case was referred to early in the paper as apparently congenital. The patient was brought to me, in 1893, when sixteen years of age. During those sixteen years she had been treated at various times and for varying lengths of time by stiff shoes, electricity, massage, and rubber muscles. The result was that she could only walk on her toes, with a very laborious and awkward gait.

The operation was done in May, 1893; Dr. George S. Mathews



assisted. The tendons and fasciæ were divided subcutaneously. Four weeks later apparatus applied. Electricity has been used every day since. The photograph shows the patient with apparatus applied, and also the present condition of the feet, over two years after operation. The muscles in this case were tested yesterday, and they react to both faradism and galvanism. The patient is able to walk very well without apparatus, but it will not be omitted for a long time yet.

CASE II.—F. G., male, aet. ten years. This boy had the acute attack when six years of age, and nothing was done to



CASE II. THE FIGURE AT THE RIGHT SHOWS THE FLEXED ELBOWS, THAT AT THE LEFT THE FLEXED KNEES AND THIGHS.

prevent the muscular contractions. He came to the Rhode Island Hospital in February, 1895. The knees were flexed at the angles shown in the photograph, the thighs were flexed on the pelvis, and the elbows were also slightly flexed. The patient was unable to stand; the photograph shows an attempt to get up on "all fours."

The ham-string muscles were divided on one leg, but it could not be straightened on account of subluxation of the tibia. Two weeks later this was reduced completely by the genuclast, and the other leg was also reduced in the same way without any division of the ham-string muscles. About two months later the constricting muscles at the hips were divided through longitudinal incisions. Before it was time for apparatus to be applied he patient died from accidental causes.

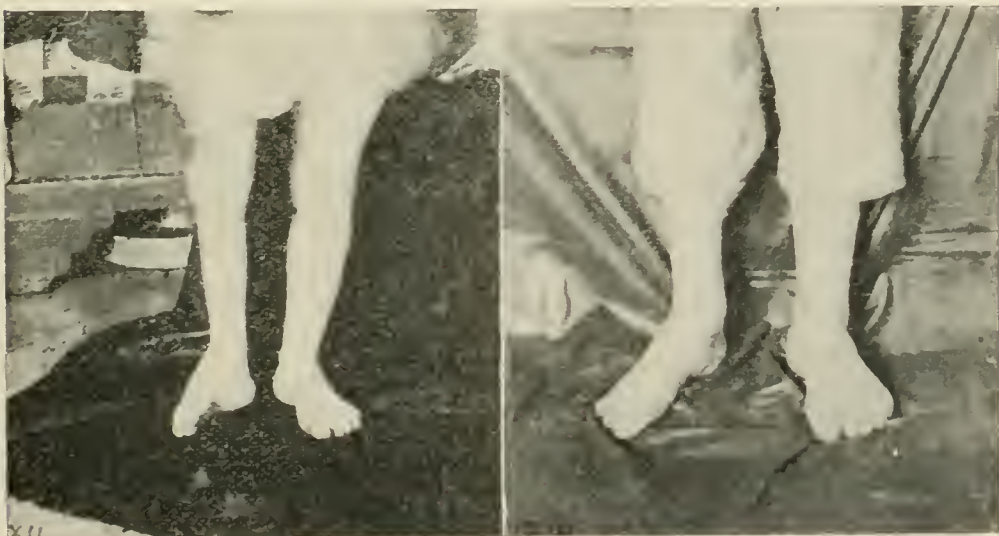


CASE III.—S. B., female, aet. seventeen years. The patient had an acute attack of infantile paralysis when two years of age,



CASE III. SHOWING RIGHT DELTOID PARALYZED, WITH SUBLUXATION.

which affected only the right arm. She was in bed three weeks. The arm was firmly bandaged at the time by various physicians.



CASE IV.—BEFORE AND AFTER OPERATION. THE LEFT FOOT IN THE POSITION OF TALIPES VARUS, THE RIGHT IN POSITION OF TALIPES EQUINO-VARUS.

The photograph shows the subluxation at the joint, which is very liable to happen in a case of this kind.

CASE IV.—S., male, aet., twelve years. This patient had an acute attack of infantile paralysis six years ago. Both legs were affected. In addition to the deformities of the feet, the right knee is also useless, and at each step the hand is pressed firmly against the lower end of the femur to prevent the knee from flexing. The operation was done July 31, 1895. Dr. Welch assisted. Everything was divided subcutaneously, and the foot forcibly straightened.

The photograph shows the foot in its corrected position. In this case the Taylor shoe has been applied, with an extension up the thigh, with a lock joint at the knee, so that in sitting down the drop catch is raised, which allows the knee to flex.

266 BENEFIT STREET.

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**The Infantile Causes of Epilepsy.**—In Gower's latest book, "Clinical Lectures on the Nervous System," some careful observations on this subject are elaborated in detail. The most frequent infantile cause of epilepsy is rhachitis. Clouston has also emphasized its influence in the production of other nervous diseases. It was Sir William Jenner who demonstrated that the condition of rickets is a general retardation of development, with various secondary necessary results, and of the association of convulsions with this general state. Backward teething is also a manifestation, but is now fully understood not to be a cause in itself of the convulsions of infancy. These are a consequence of the retarded development which occurs so often toward the end of the first year. It is the epoch at which the character of the food-supply undergoes change, or does not undergo the change that is natural. It is also a period when much functional capacity passes into functional use. The influence of rickets in causing the convulsions of infancy are of great importance in connection with epilepsy. They leave behind a residual disposition to a like morbid action, which may be continuous in its results, or may become active at a later period of life. Every variation of interval is met with. It is impossible to doubt that the convulsions of dentitions are a definite element in the causation of epilepsy. And it is also impossible to doubt that the prevention of rickets would have a considerable influence on the prevention of epilepsy.—*Medical Record.*

## A SERIOUS CEREBRAL INJURY DUE TO FORCEPS DELIVERY, AND RESULTING IN IMBECILITY.

BY S. W. S. TOMS, PH.G., M.D.,

Fellow of New York Academy of Medicine, Bellport, L. I., N. Y.

*Family History.*—Father, American, aged forty-six, living and well, but addicted to alcohol. Mother, American, aged thirty-six, living and well. No family history denoting specific or hereditary disease. One sister, aged sixteen, living and in good health, has never been afflicted with any nervous disease. The mother states that she was in good health during the period of gestation. Parturition lasted about twelve hours, the child being delivered with forceps. A mark of the instrument remained on the forehead for over two months. At three months the patient developed convulsions, which recurred in two weeks. After that he had “spells” every two or three days for about one year. These were described as slight spasms, the eyes deviating to the left, followed by a general convulsion of short duration. He did not bite his tongue, but after the convulsion would sleep with stertor.

During the second year he had convulsions every day, sometimes as many as fifteen or twenty, or thirty, and as many more through the night. They were of the same character but very slight. During the third year he remained about the same, but had measles and whooping-cough without sequelæ.

When three years old he fell from an open window, thirteen feet from the ground, striking his head, but no wound was perceptible. Following this accident he had the convulsions more severe in character, lasting longer, with biting of the tongue—struggling and frothing at the mouth—but they were not so frequent in occurrence. This went on until he was six years old. During the summer of his third year he had cholera infantum. The first night of the attack he had one hundred and fifteen convulsions between 8 and 10 p.m.—“seemed internal mostly,” his mother says: “He would bend forward his head on the chest and flex the thighs on the abdomen.” Then followed a period of remission of eight months, the convulsions recurring once or twice a week and getting more frequent until he was seven years old, when he had pneumonia. Another period



of remission followed for seven months, when he had a return of the most severe attacks he ever had. They were irregular in occurrence, being one or two a day; he would then miss two or three days, and so on, for three months. *Since then he has not had any convulsions.*

Before he had the accident from falling he could talk, form sentences, and express himself intelligently, but has never been



R. E. W., FOURTEEN YEARS OF AGE, IMBECILE, AS THE RESULT OF CEREBRAL MALDEVELOPMENT, DUE TO INJURY DURING FORCEPS DELIVERY.

able to do so since. He was ruptured at four years old by running against a chair. He wore a truss and recovered in his sixth year.

*Status Præsens.*—He is now a well developed boy, well nourished and in good physical health. He has a very hearty appetite and sleeps well; the bowels are regular daily. He is unable to talk or express himself, but makes his wants known to his mother by pointing and moving his lips in a whisper.



The mother often notices that he has periods of fever—especially at night. He acts as if suffering from headaches, taking his mother's hands, placing them against each side of his head and squeezing them. He is constantly restless, makes peculiar noises, squints his eyes and moves the muscles of his face, especially those of his mouth, in contortions. He makes constant athetoid movements of hands while awake. He is left-handed. He seems to understand mostly what is said to him and obeys fairly well.

Within a few weeks he has given evidence of extreme nervousness, and has been bad tempered and unruly; formerly he was very destructive and would be now were he not restrained. Previous to five years ago he had periods in which saliva would dribble from the mouth very profusely. During the time he is awake he constantly makes a blowing noise with his lips and mouth. There exists no marked deformity of the cranial bones; the head appears slightly asymmetrical on the right side, but the boy has a pleasing countenance and looks quite intelligent, were it not for his unnatural actions. It is three years since this history was written, when he was brought to me in the hope that I could suggest something which might be done for him.

I referred the case to Prof. Chas. McBurney for craniotomy, and he in turn asked Prof. M. Allen Starr to examine him. In response Dr. McBurney wrote: "I am not favorably impressed by this child as regards operation. The lesion is, I fear, a very extensive and irreparable one. . . . I am sure operation would not be useful. For safety I sent the child to Dr. Starr, and he sends you his opinion. I regret this conclusion, but it is the best I can reach." Dr. M. Allen Starr wrote as follows: "I am not in favor of advising an operation in this case. There has been originally a large cortical clot, and subsequently a maldevelopment which cannot, I think, be helped by surgery. He is a hopeless imbecile."

\* Through the kindness of the patient's mother I am able to present some additional facts of the case up to the time of writing, January 30, 1897. The boy is now fourteen years old and weighs 91½ lbs. He sleeps well and has a large appetite. The bowels move regularly, and there is no difficulty in micturition; he makes his want known in these respects by attracting the attention of his mother and pointing toward the water-closet.

The range of his speech is confined to single words, never forming sentences, *viz.*: “gog” for dog, “pie,” “cake,” “cat,” “boat,” and a few other monosyllabic words. This is some improvement which has taken place within two years. He obeys his mother’s commands, but is somewhat destructive, although he knows right from wrong to a large extent. He has no vicious habits—although when he is alone and can get on a couch or anywhere he can lie down, he practices thigh friction. This is not constant, for he will go sometimes for a month without attempting it. He is watched carefully, and his mother says, has never had an emission while irritating his genitals in this way. These are developed normally. He does have involuntary nocturnal emissions occasionally. Examination with ophthalmoscope not made.

His lips swell and become sore from the habit of constantly blowing, but dribbling of saliva has not taken place for a long time. His physical proportions are as follows: Height, 5 feet; chest measure, 31 inches; abdomen, 29 inches; circumference of thigh, upper third,  $17\frac{1}{2}$  inches; arm, middle third,  $6\frac{1}{2}$  inches; length, 21 inches. The measurements of the cranium are as follows: Largest circumference of head,  $21\frac{1}{2}$  inches, of right side from centre of forehead to occipital protuberance,  $10\frac{3}{4}$  inches, left the same; distance from junction of nose with forehead to top of ear, and from that to the occiput on both sides, 6 inches and  $5\frac{1}{2}$  inches respectively; distance from base of the nose over the vertex to the occiput,  $12\frac{1}{2}$  inches; from junction of one ear to that of the other over vertex,  $11\frac{1}{2}$  inches; circumference of head from hair margin on forehead, around the base of the skull, over the auricular junction with scalp, 21 inches; circumference over vertex and chin 26 inches. There is no difference on either side of the head or face in the last two measurements. As will be seen, there does not exist any variation in measurement of the right side from that of the left.

## ARSENICAL NEURITIS, WITH THE REPORT OF A CASE OCCURRING IN A LAD OF FIVE YEARS.\*

BY ALFRED STENGEL, M.D.,

Physician to the Children's Hospital, of Philadelphia ; Instructor in Clinical  
Medicine, University of Pennsylvania.

Paralysis has long been recognized as one of the symptoms of arsenical intoxication, but opinions have varied as to the pathological lesions concerned. The oldest view was that the morbid changes involve the spinal cord, mainly or exclusively; and it seems somewhat probable that changes may occasionally occur in the cord. The more important lesion, however, is found in the peripheral nerves, and in the great majority of cases neuritis is probably the exclusive lesion. This fact was first conclusively demonstrated by Jaeschke. The peripheral nerves of the extremities, and especially those of the legs are most frequently involved. Very often arms and legs are simultaneously affected, and in most instances the disease is symmetrical on the two sides of the body. Exceptionally other parts of the body are involved. The palsy may be purely motor, but is more frequently sensory as well. The onset is attended with pains in the limbs or other parts, and sometimes with distinct rheumatoid pains in the joints. Later weakness of the muscles develops and finally more or less complete paralysis with atrophy, reactions of degeneration, and loss of reflexes are observed. Exceptionally the reflexes are preserved, and they may indeed be exaggerated. In the stage of full development of the disease pain, as a rule, gives place to paræsthesia and anæsthesia, the latter being frequently irregularly distributed. In some cases, however, as has already been stated, sensory symptoms are wanting, the disease being purely motor in nature.

Arsenical neuritis may follow accidental poisoning due to contamination of the air with dust from carpets, curtains, wall-paper, and other articles colored with arsenic dyes, or it may be caused by single large doses of the drug taken accidentally, or with intent at suicide. Arsenic eaters appear to suffer infrequently when the amounts of the poison consumed are con-

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\* Read before the Philadelphia Pediatric Society, January 12, 1897.  
For discussion see page 213.



sidered. Intoxication is comparatively seldom the result of medicinal use of the remedy. I have seen several cases in which more or less pronounced symptoms followed the administration of large doses in cases of Hodgkins disease and leukaemia, and now report an instance occurring in a young boy who suffered with chorea, for which Fowler's solution was administered.

Bartie C., aet. five years.

*Family History.*—Paternal grandfather was said to have had rheumatism, probably muscular. No family history of chorea or neuroses.

*Previous History.*—Had convulsions while teething; never had scarlatina, but whooping cough, and in February, 1896, typhoid fever followed by cervical adenitis; was never strong after this time. There is no history of rheumatism. The child has always been of a neurotic temperament.

He was admitted to the out-patient department of Dr. Morris J. Lewis, at the Orthopædic Hospital on July 29, 1896, suffering with chorea. This was the first attack and had begun two weeks before without any discoverable cause. The order in which the members were affected was the following: left arm, left foot and leg, then speech became thick and incoördinate, finally the right side, very slightly.

*On admission* it was noted that the general aspect was choreic, digestion was good, appetite fair, bowels regular, sleep good and intelligence good. He was irritable in temper. There was a systolic murmur at the apex, not transmitted, and a similar murmur over the base of the heart. The reflexes were increased on the right side, not on the left. Left side paretic, but moved slightly. On the right side there were constant choreic movements, increased by volitional efforts, but quiet during sleep. There was no tenderness over the spine. He was given Fowler's solution in increasing doses, beginning with three drops three times daily.

On August 5th, the note reads: Improved, taking five drops three times daily. To come into house.

On August 20th, it was noted that he was very much quieter. Took as much as ten drops of Fowler's solution three times daily, when toxic symptoms appeared and the drug was discontinued. He was discharged on September 3d, practically well.

On September 9th, it is noted that he had been in the house until the week before. He was much improved, having little or no twitching. He did not use right foot properly. The same cardiac murmurs were heard as previously and also a venous bruit in the neck. He was ordered five drops of the tincture of the chloride of iron, three times a day.



On September 23d, it was noted that he dragged and threw his feet in a way suggestive of poliomyelitis or neuritis. Knee jerks active. He cries at times on account of pain in the legs.

The patient was admitted to my ward at the Children's Hospital on September 28, 1896, when the following facts were obtained: The choreic movements had ceased rather abruptly and the patient had been taken home from the Orthopædic Hospital, practically well. After a couple of weeks, however, he began to have a staggering gait and would frequently fall. This grew in severity until he was not able to walk without great difficulty.

On October 1st, it was noted that his station was poor and his gait extremely tottering or ataxic. Sensation was good, the knee jerks exaggerated, no ankle clonus. No pain or tenderness, slight atrophy of the legs.

During the next two months the patient improved somewhat in his ability to walk and stand, but otherwise there was little change.

On December 4th, it is noted that the choreic movements were returning. The gait and station were little changed. He was ordered quinine in ascending doses.

During the next week the chorea continued much the same, though quinine was given very freely. He was then given bromide of potash and began to grow more quiet.

On January 5, 1897, it was noted that the chorea had improved very greatly. He still had a decidedly tottering gait and poor station. The electrical reactions could be tested only with the faradic current. No response was obtained in the extensors of the legs and feet and only a slight contraction in the quadriceps. The intrinsic flexors of the foot responded distinctly though feebly, the flexors of the leg very little, and those of the thigh scarcely any more. The gluteal group and the abdominal muscles acted strongly.

There is total preservation of sensation, and the skin reflexes (plantar, cremasteric or abdominal), are active. The knee jerks are preserved and active. At times they seem to be decidedly exaggerated. There is some improvement in his gait. There is some atrophy of the legs, particularly the right.

This case presents a number of points of interest to which I shall allude. Though the case permits of a certain amount of doubt as to the diagnosis, I am myself convinced that it is one of arsenical neuritis. It is necessary, however, to consider other possible affections. The onset of the disease appears to have been rather rapid, if not abrupt, and the symptoms grew in severity from day to day. There had been previous symptoms of arsenical intoxication of unmistakable character, the paralysis following after an interval of a week or more. The fact that such an

interval existed does not preclude the possibility of arsenical neuritis; indeed, this has been quite commonly observed in reported cases. As a rule, this interval is quite as long, or longer, than that which occurred in my patient; and sometimes the onset of the palsy is delayed for very considerable periods of time. There were some sensory manifestations in the beginning, though the history records no details beyond complaint of pain in the legs. Subsequently sensory manifestations were entirely wanting. The absence of anæsthesia is of considerable moment, as some writers have held this to be one of the invariable symptoms. Gerhardt, however, long ago reported cases in which objective disorders of sensibility have been wholly, or almost wholly wanting, and in the case of Putnam, and the recent one of Comby, there was complete absence of anæsthesia.

The disease which is to be distinguished or excluded with the greatest care is acute anterior poliomyelitis. Among the conditions which favor this diagnosis are the complete preservation of sensation in the skin, and the persistence of the paralysis. As far as the former symptom is concerned, enough has been said to show that it does not exclude neuritis due to arsenic. As for the latter, it may be said that cases of chronic character, running through a period of many months, or even years, and indeed persistent paralysis, may follow the medicinal use of the drug. This, however, would be unlikely in a case such as mine, in which relatively small amounts were given. The dose (ten drops) was perhaps a large one for a child of five years, but the remedy was continued only thirty days, during which the total amount given was less than one fluid ounce. Despite the points spoken of as more significant of poliomyelitis, the weight of the evidence points to neuritis. Among the more important symptoms in this direction are: The almost completely symmetrical character of the paralysis; the absence of decided wasting; the preservation of reflexes, which would almost certainly be lost in infantile palsy; the distinctly tottering and ataxic gait, and the disturbance of station.

It is scarcely necessary to consider other diseases which occasion paraplegia, such as myelitis and diseases of the membranes of the cord.

The occurrence of this accident during the administration of arsenic for medicinal purposes is of great importance. All authors who have had large experience in the use of arsenic in

nervous diseases, skin diseases, and other conditions in which the drug is given in large doses, and for long periods, agree that neuritis is a rare accident. Dr. Morris Lewis has told me that he had never before met with a case in his service at the Orthopædic Hospital, and does not recall a case in the service of his colleagues. Practically the same experience is reported by one of the chiefs of a large nervous clinic in New York (personal communication to Pellew, Hamilton's System of Legal Medicine). This gentleman met with but two cases among several hundred patients, who received full doses of the drug. Finally a review of the literature illustrates the rarity of this accident, very few observers having reported more than a single case or a few cases. The reported cases further illustrate the fact that the symptoms not rarely occur most unexpectedly, and even after the remedy has been discontinued. This suggests the thought that there may be a cumulative action. While there is no positive proof that such cumulation does occur in the sense of a complete storing up of the arsenic, it is likely that the amount in the system increases greatly as the administration is continued. This results from the slow elimination of the remedy, and perhaps, in certain cases, to inadequate renal activity. Sometimes premonitory symptoms may give a sufficient warning of danger, as in the case of Goubeyre, in which rheumatoid pains occurred after fifteen days, the patient taking two drops at a dose. More frequently there is no warning of the nervous complication, but only the usual gastro-intestinal disturbances indicative of toxic action.

It is of some importance to study the question of susceptibility, and the size of the dose which may possibly cause neuritis. Some patients tolerate enormous doses without untoward results. I have repeatedly given twenty drops three times daily for weeks, in pernicious anæmia and leukæmia, without provoking more than the ordinary gastro-intestinal symptoms. In several cases I have given even larger amounts, one recently under my care taking as much as forty or sixty drops three times daily. Sometimes, however, it is soon apparent that the remedy is not well borne, and in these I have always reduced the amount administered to a safe quantity. The case now reported, however, shows that such a rule will not always suffice to obviate serious results. In the child presented to the Society there had been no definite toxic signs until August 20, 1896, and the



remedy was immediately discontinued. In spite of this precaution, however, the nervous complication occurred, and was doubtless brought to its full development by the arsenic still remaining in the system when the administration was stopped.

No useful deductions regarding the dose can be drawn from a study of the reported cases. In that of Gourbeyre, suggestive symptoms occurred when but six drops of Fowler's solution were given daily; in one reported by Gaillard, extensive paralysis followed the administration of fifteen drops four times daily; in one of Dana, the dose was thirty drops three times a day when symptoms began. Other cases might be cited, but these illustrate the variability even among the cases in which moderate medicinal use of the remedy has been followed by paralysis. No comparisons can be made between the activity or toxicity of arsenious acid and the arsenites, though it is certain that the former is less dangerous, though for the same reasons no doubt less effective as a remedy.

In conclusion, it may be held that there is some reason for believing that elimination rarely keeps pace with the administration when moderate or large doses are given. As a practical measure of safety, it is therefore advisable to discontinue the remedy from time to time for periods of a week or two.

332 SOUTH SEVENTEENTH STREET.

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**Morphinomania in an Infant Four Months Old.**—*La France Médicale*, May 15, 1896, contains an account of a four months old baby, brought up on the bottle by a nurse. As the baby was irritable and sleepless at night, the nurse had nothing better to do than to add to the milk a decoction of poppies. At first one poppy head was sufficient to produce sleep for six to eight hours; later on three were required, which were generally given in the evening. On swallowing, the child seemed well and ate fairly. Its development, however, seemed to stop for two months, and it was pale, delicate and thin. As soon as the decoction was stopped the child got irritable, crying constantly, and refused to take any nourishment. After a week of abstinence, it became very weak, and the pulse and respiration became frequent. Then a decoction was administered again, and the infant recuperated at once, and after sleeping for several hours, woke up apparently in good health. When the drug was suppressed again, the stools became greenish and mucous, and the child died ten days later.—*Journal of Nervous and Mental Diseases*.



## Clinical Memoranda.

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### PERICRANIAL CELLULITIS AND CEPHALHEMATOMA, CONSEQUENT UPON THE USE OF HIGH FORCEPS IN A MODERATELY CONTRACTED PELVIS.

BY EDWARD NICHOLAS LIELL, M.D.,

Lecturer on Gynecology, New York Polyclinic; Visiting Gynecologist, St. Elizabeth Hospital, New York.

E. R. S., age 21, primipara, confinement April 11, 1896. Presentation vertex, right occiput anterior. First stage of labor dilatory; pains of feeble expulsive power. Fœtal head disproportionately large to diameters of pelvic brim, the latter being somewhat contracted.

High forceps were then applied preferably to version, because of uterine inertia, delivery occupying almost two hours, the head when delivered being large and elongated to nearly double its diameter.

The application of forceps at the brim gave rise to but slight laceration of the maternal tissues. On the other hand, the infant's scalp gave marked evidence of the strong and long continued pressure of the forceps and of contact with the bony pelvis.

The day following delivery evidence of infiltration of the tissues of the scalp presented itself, embracing the occipital and posterior left parietal regions, the reason for this being that these regions received the greater portion of the impact of force during descent and rotation.

This infiltration of tissue gradually tended towards an inflammatory condition, finally developing into a pericranial cellulitis with suppuration. There was also associated considerable laryngitis and aphonia, the temperature rising to 102.5°.

To anticipate more extensive suppuration a free crucial incision with two counter openings, was made on the fourth day. The wound was irrigated with peroxide of hydrogen and packed with narrow strips of ten per cent. iodoform gauze. The dressings were removed daily at first, the discharge being very pro-

fuse. Six weeks had passed by before this wound fully healed, the temperature on the eighteenth day still being 99.8°.

Some hours subsequent to delivery a cephalhematoma was apparent over and to the right of the posterior fontanelle which, because of the region, gave thought at first of a hernia cerebri. The hematoma gradually increased in size up to the tenth day, when it attained its maximum, being then the size of a small orange. After remaining stationary for several days its decrease was gradual, until on the twenty-third day evidence of suppuration was detected, when an incision was made and a quantity of pus evacuated.

There was also delayed union of intra-parietal suture, a groove of about one-quarter of an inch in diameter being traced by the fingers between the parietal bones.

Mention is made by more than one writer that in cephalhematoma a pre-existing malnutrition is the basis of its etiology. Such cannot be ascribed to the case in question, however, since the child at birth seemed well nourished, its weight being 9¾ pounds, the mother also having been perfectly well and healthy in every respect; in fact, suffered no discomfort whatever during the many months of gestation.

In reference to pericranial infiltration and suppuration, it is a fact that, in infants, the pericranium is but loosely attached to the skull, and any undue or long-continued pressure, due either to the forceps or to the bony pelvis, especially if the latter be contracted, as in the case narrated above, may readily cause rupture of the subcutaneous tissues, and consequent inflammation and possibly suppuration.

109 WEST EIGHTY-FOURTH STREET.

## Occasional Periscope of Teratology.

BY J. W. BALLANTYNE, M.D., F.R.C.P., EDIN.,

Edinburgh.

**Hecker, Th. : Congenital Intestinal Occlusion.** (*St. Petersburg med. Wochenschrift*, n.f. xiii. No. 45, p. 399, 1896.)

A three-day old girl baby was brought into the Elisabeth-Kinder-Hospital in St. Petersburg, suffering from vomiting, which had been going on since soon after birth. The mother was a primipara, and neither on her side nor on that of the father was there a history of malformation, syphilis, or tuberculosis. During her pregnancy she may have suffered from influenza or rheumatism, and once at the fourth month she had a slight accident (a stumble). The child took the breast soon after birth, but almost immediately, vomiting of meconium began and continued. There were slight traces of jaundice; the abdomen was distended. The external genitals and anus were well formed; a catheter, however, passed per anum only entered for about 6 cms., and from the bowel came some greenish-gray dried masses. An attempt was made to reach and bring down the upper part of the rectum from below, but this failed, and it was concluded that the case was not one of atresia recti but of more or less widespread stricture higher up. Consequently the abdomen was opened on the left side, above Poupart's ligament. A distended loop of bowel was found as well as a much contracted portion which passed downwards into the pelvis, but it could not be made out if they were continuous. An anus præternaturalis was made in the distended loop and for the next twenty-four hours a yellow feculent fluid passed therefrom, but the infant died at the age of six days.

In the abdomen, in addition to numerous traces of old standing and also of recent foetal peritonitis, there were found two separate tracts of intestine: one, collapsed into a cord-like structure beginning blindly above including the cæcum and ending below at the anus; and the other, widely distended, being continuous with the pyloric end of the stomach above, and

ending blindly below at the pelvic brim. It was in the latter tract that the artificial anus had been made. The author then discusses the mode of origin of this malformation and traces it to foetal peritonitis and volvulus, but which of these two is to be regarded as primary must be left uncertain. It did not seem probable that the slight maternal traumatism could have been the starting point. Doubtless the separation of the two tracts of intestine was due to torsion.

**Hertwig, O.: Experimental Production of Animal Malformations.** (*Experimentelle Erzeugung Thierischer Missbildungen*, Leipzig, 1896.)

Hertwig has carried on a series of experiments upon the ova of *siredon pisciformis* which have a certain bearing upon the production of malformations in the human subject. The teratogenic method followed was the subjection of the axolotl ova during development to the influence of a saline solution (.6 to .7 per cent.); and the result was the production of anomalies similar to anencephaly, hemicrania, and spina bifida in the human foetus. Only a single system (the central nervous system), felt the effect of the chemical agent; in other words it was only those cells of the epiblast destined to be converted into ganglion cells which were influenced by it. It may be that injurious chemical substances circulating in the mother's blood produce similar effects on the foetus; thus the excessive use of alcohol in the early weeks of pregnancy or the presence in the circulation of toxins from febrile processes or large quantities of medicinal agents may quite possibly lead to interference with the normal embryonic evolution and development.

**Supino, F.: Considerations on Experimental Teratogenesis.** (*Bollettino della Società Veneto-trentina di scienze naturali*, vi., No. 2, p. 43, Padova, 1896.)

Supino is of opinion that external mechanical agencies, if acting uniformly, do not give origin to monstrosities, and in order to prove this has instituted experiments upon the ova of *Trutta lacustris*. The teratogenetic method adopted was the passage of induction currents through the basins of running water containing the ova. One monstrosity was found among the ova so



treated, but it was a double monster with a single vitelline sac and therefore doubtless not due to the electricity; one other teratological production (a fish with three eyes) was met with, but not among the ova subjected to the effect of the current. From the electrified ova, however, there resulted individuals of a smaller size, less active, and more weakly than those coming from ova not so influenced. It would seem also that the development of these was hurried. The important conclusion is that external mechanical causes, acting uniformly, even if energetic and long continued, do not produce monstrosities or anomalies; but if they act upon one given part of the organism they do have such an effect as has been shown also by the experiments of Dareste and Lombardini. [In this respect Supino's observations agree with those of Hertwig, although the animals experimented on and the means of experimentation differed. J. W. B.]

**Archambault, L.: Polydactyly.** (*Thèse pour le doctorat en Médecine.* Paris. 1896.)

In his thesis Archambault gives details of several families in which polydactyly was hereditary and coincided with distinct neuropathic manifestations. This association of teratological conditions with the mental and bodily stigmata of degeneration has of late years been much dwelt upon by Féré of Paris. One of the personal observations in the above contribution was very remarkable. There was a history of hereditary polydactyly in a family extending over a period of more than a hundred years—from 1767 to 1896. The first to show the anomaly was P. B., born in 1767; in him the polydactyly (six digits) affected one foot. He had two daughters, Adèle and Lise. Adèle was not malformed, but she had five infants of whom the youngest, a girl, was a sexdigitarian (both hands), and she married a widower (who had had normal children by his first wife) and gave birth to four children of whom three, a boy and two girls, were sexdigitarians of the same type as their mother. Several of the affected members showed neuropathic manifestations. Lise, the younger daughter of P. B., was a sexdigitarian; she had two daughters, the younger of whom had polydactyly like her mother; and she in her turn had three children of whom one had a very rudimentary sixth finger. It is noteworthy that whilst in P. B., the polydactyly affected the feet, in all his de-

scendants who showed the anomaly, it was in the hands. Females were more often the subjects of it than males. Further in this family the children who inherited this malformation were those who most closely resembled their malformed parent. There were also some neuropathic signs of the nature of neuralgia, facial asymmetry, local asphyxia of the limbs, etc. From this case and from several others the author concludes that polydactyly is hereditary, and that there is an indubitable relation between it and neuropathic heredity. In referring to the treatment of polydactyly Archambault recommends removal of the extra digit at the time of birth with scraping of the epiphysial cartilage to prevent a return of the condition.

**Manners-Smith, T.: A Sirenomelian Monster.** (*Journ. of Anat. and Physiol.*, xxx., p. 507, 1896.)

Manners-Smith describes a sireniform foetus (variety *sirenomelia*) whose viscera presented some characters not usually met with in this kind of monstrosity. In addition to the fused condition of the lower limbs and the absence of external genitals and anus it was found (contrary to the general rule) that the urinary organs and the glutei muscles were present. The testes were situated outside the abdomen in the inguinal region, and the vasa deferentia opened into the rectum before it reached its blind ending. The kidneys were large but were converted into cysts; the bladder was well developed but small, and had an urethra of about half an inch in length. The author is inclined to regard the common absence of the urinary organs in this type of monstrosity not as an integral part of the condition but as a secondary change due entirely to pressure, the pressure being caused by the urinary secretion which cannot escape from the imperforate state of the urethra. The cystic condition of the kidneys in the above case would support this view.

**Brabandt, A.: Monopodia and Exomphalos.** (*Inaugural Dissertation.* Leipzig. 1896.)

The monstrous infant described by Brabandt was the offspring of an multiparous strumous woman, whose other children were not malformed. The head and upper limbs of the infant (a male) were normal, but the anterior abdominal wall was defective and most of the viscera were outside. The right kidney and

ureter were absent; there was ectopia vesicæ and absence of the urethra, and an accessory canal opened into the lower end of the large intestine which ended blindly, there being complete atresia ani. The penis showed epispadias and was twisted backwards and to the left. The left half of the scrotum was empty, the right half was absent. No trace of testicles was found anywhere. The amniotic membrane was directly continuous with the skin of the fœtus round the abdominal opening. Only the left umbilical artery was present; the vein had its usual relations. The spinal column showed marked kypho-scoliosis; there was a great convexity towards the right side and much torsion. The most interesting malformation, however, was the complete absence of the right lower limb and innominate bone; the left was present but its innominate bone was twisted. The author follows Dareste in believing that the case was produced by an anomaly of the amnion; through its defective development at the caudal end of the embryo, the parts were drawn out of position and by pressure their normal development was arrested. The pressure affected most the right side. It may be noted that the pregnancy which resulted in the birth of this monopodial infant was quite uneventful.

**Stern, H.: An Infant with Eventration and Several Other Malformations.** (*Inaugural Dissertation.* Königsberg i. Pr., 1896.)

An infant in many ways resembling that described by Brabandt (*vide supra*) was that recorded and figured by Heinrich Stern. The infant, a prematurely born female, had a normally formed head and upper limbs; the right leg was present, but in the position of the left was a hernial abdominal protusion covered with the amniotic sheath of the umbilical cord. The head was turned to the right side and the whole trunk was bent in the same direction, the spine showing a marked convexity towards the left. In the sac above-mentioned were the liver, stomach, intestines (large and small), and spleen. In the immediate neighborhood of the sac and to its inner side was a very rudimentary left leg, about two inches long, with a single toe. The right lower limb was in a position of marked abduction, the leg was sharply flexed on the thigh and turned towards the middle line, and there was pes varo equinus. Three sinuses



ending blindly were seen in the space between the external genitals and the rudimentary left leg. Dissection showed absence of the left side of the diaphragm. The umbilical cord contained two vessels, the vein and the artery of the right side. Both kidneys were present, as was the bladder; but only the right horn of the uterus and the right tube and ovary were to be found. Amniotic bands and filaments were attached to the rudiment of the left leg.

**Blacker, G. F., and Lawrence, T. W. P. : A Case of True Unilateral Hermaphroditism with Ovotestis Occurring in Man.** (*Trans. Obst. Soc. Lond.*, xxxviii., p. 265, 1896.)

The specimen described by Blacker and Lawrence was an eight and a half months' foetus, which had a maldeveloped uterus unicornis on the right side with a Fallopian tube and ovary, while on the left side the genital gland had the microscopical structure of both ovary and testis and was connected with a maldeveloped Fallopian tube and an enlarged Wolffian duct representing epididymis and vas deferens. The authors claim that this is the only case on record of true unilateral hermaphroditism in man, and their microscopical sections go far to substantiate their claim.

24 MELVILLE STREET.

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**The Chemical and Physiological Changes in Milk caused by Boiling.**—In the *British Medical Journal* Dr. J. L. Kerr remarks that there is reason for supposing that when fresh milk is ingested the living cells are at once absorbed without any process of digestion, and enter the blood stream and are utilized in building up the tissues. The casein of the milk is digested in the usual way of other albuminoids by the gastric juice, and absorbed as peptone. There is also absorption of serum albumin by osmosis.

The chemical result of boiling milk is to kill all the living cells, and to coagulate all the albuminoid constituents. Milk after boiling is thicker than it was before. The physiological results are that all the constituents of the milk must be digested before it can be absorbed into the system; therefore there is a distinct loss of utility in the milk, because the living cells of fresh milk do not enter into the circulation direct as living protoplasm, and build up the tissues direct, as they would do in fresh unboiled milk.

In practice, he says, it will have been noticed by most medical practitioners that there is a very distinctly appreciable lowered vitality in infants which are fed on boiled milk. The process of absorption is more delayed, and the quantity of milk required is distinctly larger for the same amount of growth and nourishment of the child than is the case when fresh milk is used.—*New York Medical Journal.*



## Clinical Sketch.

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### ACUTE ANTERIOR POLIOMYELITIS.

Acute anterior poliomyelitis, or infantile spinal paralysis, is one of the most important of the nervous affections of childhood. It presents several types in the earlier stages, but in the majority of cases follows a very typical clinical course. The variations from the ordinary type are well described in the present number by Dr. Peckham.

The presumptive evidence that this peculiar affection is an infectious disease is very strong. While it runs a chronic course, its onset is sudden and acute, and is preceded by very few premonitory symptoms, frequently by none whatever. The most common group of initial symptoms are fever, vomiting, and convulsions. The fever ranges between  $101^{\circ}$  and  $103^{\circ}$ , but occasionally reaches a higher point. It continues for twenty-four or forty-eight hours, when it gradually subsides. In rare cases it is present for a week. The vomiting occurs very early, and is independent of gastric irritation. It frequently assumes the cerebral type. Convulsions are of less frequent occurrence than are the two preceding symptoms. They are most common during the first day of the illness, but occasionally occur during the second and third days. They are general in character. Coma is sometimes seen, but is less frequent than are convulsions. The severity of the onset is an uncertain criterion by which to foretell the gravity of the later symptoms.

Paralysis may be present from the outset, but it is rarely recognized before the second or third day, and is frequently overlooked until a later period. The diagnosis cannot be made until the paralysis is recognized. It is at first widely distributed, but as a rule diminishes after the first week, and no opinion can at first be formed as to which members are to be permanently paralyzed. The subsidence of the general paralysis may require several months. This retrogression of the paralysis, leaving one or more members permanently paralyzed, is one of the most characteristic features of the disease. Monoplegia is the most common form assumed by the later paralysis, the leg being more commonly affected than the arm. Hemiplegia may occur,

but is rare; facial paralysis is extremely rare. In a considerable number of cases the distribution of the later paralysis is peculiar and apparently contradictory.

The paralysis is of the flaccid order, and is rapidly followed by altered electrical reaction and diminished reflexes. Atrophy is, in fact, a most characteristic feature of the disease. It may sometimes be noticed by the third week or even earlier. The wasting affects chiefly the muscles and subcutaneous tissues, but the growth of the bone is frequently retarded. In the later stages the skin is blue, cold, and clammy, and the limb seems relaxed and lifeless. Contractures occasionally occur, but they are never spastic like those of cerebral paralysis.

The electrical reactions are of great importance. Both the muscles and nerves exhibit, with rare exceptions, the complete reaction of degeneration. These changes in electrical behavior appear very early in the disease. The faradic current fails to elicit a response from either the muscles or nerves. Galvanic stimulation fails to excite the nerves, and the response of the muscles is sluggish. Sachs states that it can be asserted with some degree of certainty that those parts which continue to respond well to faradism after a week or more will not remain paralyzed. During the later stages the return of the faradic response in any muscle or a normal behavior during galvanic stimulation would lead us to infer that it may recover its previous function, but muscles which exhibit marked electrical changes for a considerable period of time have suffered serious injury.

Pain is rarely present in acute anterior poliomyelitis; the bladder and rectum are not involved; after the initial stage there are no cerebral symptoms. The plates in the present number show most admirably some of the appearances presented in the late stages.

“Summarizing all the symptoms,” says Sachs, “we may state that the diagnosis of poliomyelitis may be made if the paralysis, however widely distributed or however narrowly limited, and in whatever part of the body, comes on after an acute onset marked by fever, vomiting, and convulsions, and if this paralysis is associated at an early day with atrophy, with changes in electrical reactions, and with a loss of reflex activity in the paralyzed parts.”

# ARCHIVES OF PEDIATRICS.

DEVOTED TO THE

DISEASES OF INFANTS AND CHILDREN.

MARCH, 1897.

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## THE JOINT AFFECTIONS OF SCARLET FEVER.

Scarlatinal rheumatism has been relegated by modern methods of investigation to the list of rare diseases. The joint affections which occur during the course of scarlet fever are, however, not uncommon, but they are clearly proved to be due to more than one pathological condition. When all conditions marked by pain and swelling of the joints were grouped under the comprehensive name of rheumatism, it was natural, when such symptoms occurred as a complication of scarlet fever, that it should be called scarlatinal rheumatism. It is certain, however, that true rheumatic arthritis is one of the rarest of the joint affections complicating scarlet fever.

Additional proof of this fact has recently been offered by Dr. R. W. Marsden, of London, in the *Medical Chronicle*, where he reports most carefully made observations upon a large number of scarlet fever cases. He agrees with all recent observers that the most common joint lesion of scarlet fever is a synovitis, and believes that the next most common is septic arthritis.

The only classification which the author has met with is one given by Dr. Ashby, in whose article the following forms are

described: (1) Synovitis; (2) acute or chronic pyæmia; (3) acute or subacute rheumatism; (4) scrofulous disease of joints.

A slightly different nomenclature is open to fewer objections; the following classification is therefore suggested: (1) Scarlatinal synovitis; (2) septic arthritis; (3) acute or subacute rheumatic synovitis; (4) tubercular arthritis.

The onset of scarlatinal synovitis takes place during the defervescence of the pyrexia caused by the attack of scarlatina, or soon after the defervescence is completed. Occasionally the onset of synovitis is not accompanied by any pyrexia. The mode of onset is usually acute, and, as a rule, it runs an acute course. In some cases there is nothing to be found save pain on movement, or tenderness; in others the whole of the hand is red and swollen. Between these two conditions all grades are met with.

The hands and wrists are the favorite site, since they were attacked in no less than seventy-two out of one hundred cases. Any joint, however, may be affected. In the author's cases the following order was observed: Elbows twenty-five times, knees eighteen times, and the shoulders, hips, ankles and toes occasionally. On one occasion the first indication of the onset of the complication was stiffness of the lower jaw.

Septic arthritis is frequently known as pyæmic arthritis. In this condition the large joints are usually involved, and the lesions are apt to be multiple. The condition is always a grave one, as suppuration and serious injury to the joint is common.

True rheumatism, according to Dr. Marsden, occurs third in the order of frequency. It occurs late in the course of the disease, and rarely proves serious. In the cases observed by him he was led to the following conclusions: (1) The attack is always of the subacute variety; (2) the onset occurs from the fifth to the eighth week of the attack of scarlatina; (3) the skin is moist in the more marked cases with moderate pyrexia, though decided sweating is not met with; (4) the attack usually passes off in the course of a few days; (5) the heart sounds during the attack are, as a rule, muffled and indistinct, and occa-



sionally there is distinct evidence of endocarditis; (6) the joint symptoms may recur; (7) anti-rheumatic treatment, when necessary, is always followed by immediate relief; (8) there is always an inherited predisposition to rheumatism.

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### MODERN MEDICINE.

One is tempted to become skeptical regarding the alleged elevation of standard of the medical profession of modern times, when he reads articles which appear from time to time in certain medical journals. This feeling was developed to an unusual degree recently while reading an article in one of our best homœopathic contemporaries upon the effect of small-pox on mortality returns. Statistics are quoted abundantly, purporting to show that the general mortality of the world has not been diminished by the absence of small-pox; and what is more surprising, that in years in which small-pox is most prevalent, the general death rate is lowest. This is explained on the ground that "zymosis continues a constant quantity"; hence, if people do not die of one zymodic disease, they must die of another. This astonishing proposition is bolstered up by the statement that measles and scarlet fever are more fatal than they formerly were. Zymosis being constant, if small-pox kills less people, other diseases must kill more. These other diseases which have taken its place have been intensified, we are informed, and made dangerous within the last hundred years by the foolish and wholesale use of blood poisoning vaccine virus.

There are some highly interesting remarks regarding the effects to be expected upon the causation of tumor and cancer by the introduction of cells of a rapid growing animal (cow) into those of a slow growing one (man). This sets up irregularity, disparity, disintegration, and vitiated growth, which in the end produce some dire disease. The article closes with the following choice bit of lunacy: "Small-pox is not a mysterious visitation, to be mysteriously dealt with or dodged by medical arti-

fice, but is a crisis of impurity in the blood, induced by foul conditions of life, which cannot better be disposed of than in the course of nature by eruptive fever." Let us hope, if such a crisis of impurity should occur in our blood, that it may be removed in the beneficent course of nature by an eruptive fever, which will, in about sixty cases in one hundred, remove us to a better world, where such crises of impurity do not occur, and where no face must bear its indelible marks.

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### THE BABIES' HOSPITAL OF NEWARK.

That vigorous worker, wise physician, and public-spirited citizen, Dr. Henry L. Coit, is now engaged in another most commendable undertaking, nothing less, in fact, than the establishing of an infants' hospital. His tireless efforts and keen perception of existing conditions and necessities were successful in establishing the *certified milk* system in tangible and practical form. That system, now in operation in Newark, has become widely known and has had a most potent influence in securing an improved milk supply in other places, even where the complete system has not been secured. When such a man turns his attention to any undertaking, it is a foregone conclusion that it will succeed.

The Babies' Hospital of Newark, though but three months old is already an assured success. It has a building adequate for its present needs, nearly equipped and entirely free from debt. It is now caring for twenty-five patients, and facilities will soon be completed for increasing the number to fifty. It is modeled largely after the Babies' Hospital in New York, even to that most important adjunct, a training school for nursery maids. The classes of this school are already well filled and its success seems as well assured as that of the Hospital.

Newark is one of the largest manufacturing centres of the country and offers an unusual field for a hospital of this peculiar character. There is not a large city in the country, however, in

which such a hospital would not prove a true charity. It will be remembered by those who read the excellent article on the Babies' Hospital in the October number of the ARCHIVES that the object of this class of hospitals is to receive young infants unaccompanied by their mothers and to give them the most perfect care that modern experience in pediatrics can afford, and that nursing which can be given only as the result of special training. The Newark Hospital has very wisely adopted this system which has proved so successful in New York, modifying it so far as its peculiar conditions may require.

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#### THE PEDIATRIC SECTION OF THE AMERICAN MEDICAL ASSOCIATION.

The next meeting of this Section give promise of being one of unusual interest. Although it does not occur until the first week in June, the programme is well advanced, fully thirty papers having been already promised. Diphtheria and the anti-toxin treatment is apparently to receive more attention than any other subject. The papers on these subjects are numerous and the session at which they are read will undoubtedly be one of great interest. Other subjects upon which papers have been promised are meningitis, typhoid fever, constipation, intubation, rickets, enlarged bronchial glands, and intuscesseption. Much of the excellence of the programme and its completeness at the present time is due to the active efforts of the energetic and efficient secretary of the Section, Dr. Henry E. Tuley, of Louisville. The work of preparing the programme was begun early and has been vigorously pushed and as a result a most successful and profitable meeting is to be expected. Arrangements have been completed for a good room in which the various sessions will be held, so that the noise and confusion experienced at Atlanta will not be encountered at Philadelphia.

## Bibliography.

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**A Bacteriological and Anatomical Study of the Summer Diarrhœas of Infants.** By William D. Booker, M.D., *Clinical Professor of the Diseases of Children, Johns Hopkins University; Physician in Charge of the Thomas Wilson Sanitarium for Sick Children.* (Reprinted from *Johns Hopkins Hospital Reports*, Vol. vi.) Baltimore: The Johns Hopkins Press. 1896.

This is a most remarkable example of painstaking and scientific investigation. It is a continuation of a study of various forms of bacteria found in the fæcal discharges of thirty-one infants affected with summer diarrhœa, reported in the ARCHIVES in 1890. Between the years 1889 and 1895, the author has made a similar study in the case of ninety-two infants. In thirty-three of these infants who died, the organs were also studied. The result of these observations, together with those obtained from the microscopical study of the lesions in fatal cases, forms the subject of the work under consideration, and is a monument of industry. These cases are first presented in tabular form, which is followed by a minute history of over thirty cases.

The evidence derived from the anatomical and bacteriological study of these cases has led the author to formulate certain conclusions, which, however, in view of the complex nature of the summer diarrhœas of infants, the shortness of the season during which they prevail, and the many difficulties in the way of obtaining correct information concerning them, are not to be regarded in the light of positive conclusions. These are so important that we present an extended abstract of them.

1. The conditions for the development of bacteria in the intestine of infants affected with summer diarrhœa are different from those obtaining in the healthy intestine of milk-fed infants. These conditions are favorable to more varied bacterial vegetation, to a richer growth of varieties of bacteria found inconstantly and in small numbers in the healthy intestine, and to a more uniform distribution through the intestine of the two constant varieties of milk-fæces bacteria.

Escherich has found for the healthy intestine of milk-fed infants that bacteria are demonstrable in enormous numbers in the intestinal contents, and that these bacteria consist chiefly of



*bacillus lactis ærogenes* and *bacillus coli communis*, which are constantly present. In addition to these two constant varieties of bacteria, Escherich isolated from the intestinal contents twelve others which appeared in small numbers, and without regularity or frequency. The inconstant varieties of bacteria are for the most part ærobic, and so far as they develop at all in the intestinal canal, probably grow upon the peripheral layer, which contains a small amount of oxygen. Corresponding with the greater extension of this layer in the large intestine, they are found there more frequently, and rarely, if ever, appear in the small intestine. Streptococci and liquefying bacilli are found among the inconstant varieties. The two constant milk-fæces bacteria are capable of growing in the intestine with the production of fermentation without oxygen, and they occupy for the most part different parts of the tract. *Bacillus lactis ærogenes* is present greatly in excess of the colon bacillus in the upper part of the small intestine, but in the lower part of the small intestine and throughout the colon its numbers diminish, and in the healthy stools comparatively few individuals of this variety are found. On the other hand, bacilli *coli communes*, while appearing in small numbers in the upper part of the small intestine, become more and more numerous in passing down the intestine, and predominate by far above all other varieties of bacteria in the stools.

In infants affected with summer diarrhœa, the inconstant varieties of bacteria are much more prominent, and frequently appear in immense numbers in the small intestine, and their whole number often exceeds by far that of the two constant varieties in the colon. *Bacillus coli communis* and *bacillus lactis ærogenes* appear more uniformly distributed through the intestine than is wont to be the case under normal conditions.

II. No single micro-organism is found to be the specific exciter of the summer diarrhœa of infants, but the affection is generally to be attributed to the result of the activity of a number of varieties of bacteria, some of which belong to well-known species and are of ordinary occurrence and wide distribution, the most important being the streptococcus and proteus vulgaris.

Micrococci are present in all of the cases, in immense numbers in some, being fewer in others. In some cases they failed to grow on culture media, but appeared in great abundance in cover-slip preparations from the intestinal contents and in hardened

sections of the intestine. In some cases colonies of streptococci are more numerous than all the others. In cover-slip preparations from the intestinal contents, the cocci generally appear in chains, and in the few cases in which they occur mostly in heaps, cultures give colonies of streptococci without other forms of cocci. Very rarely a few colonies of staphylococci are found.

The morphology of the streptococci is variable; sometimes they are small and uniform, sometimes large and uniform, or again they may be irregular, some of the individuals of the chains being large and others small. A similar variability in morphology is often seen in the same streptococcus, as a result of changes of culture media, and at different periods of the culture. Streptococci appear frequently and in considerable numbers in the stomach and duodenum, but are much more constant in the ileum and colon, being found in greatest abundance in the ulcerations.

The attention of several observers has recently been directed to the importance of the presence of streptococci in affections of the intestine. De Cerneville reports three cases which corresponded in general to a typical case of typhoid fever. None of them came to autopsy, but in the stools large numbers of streptococci were found, and nothing was seen which resembled the typhoid bacillus. He concludes that streptococcus enteritis may simulate typhoid fever and is to be distinguished only by slight variation in some of the symptoms.

*Proteus vulgaris* is found in more than half the cases of serious diarrhœa and is seldom seen in mild cases. The patients often show general toxic symptoms. Vaughan has obtained from beef tea cultures of this germ a proteid substance which causes active vomiting and purging and finally death when injected under the skin of young animals.

III. In the superficial epithelium of the intestine is apparently to be found the chief protection of the mucosa against the invasion of bacteria.

When the epithelium is well preserved, bacteria are not found in the mucosa beneath, whereas they may be seen entering it in places where the epithelium has been lost or injured. The first step in the pathological process is probably an injury to the epithelium from abnormal or excessive fermentation and secretion in the canal, from toxic products of bacteria, or from other factors. These altered relations furnish conditions favorable to the activity

and more vigorous growth of the varieties of bacteria which thrive but indifferently in the normal intestine.

IV. The pathological lesions found in the intestine and other organs of the body in the summer diarrhœas of infants indicate that bacteria exert a direct injury upon the tissues in some instances, whereas in others the damage is brought about indirectly through the production of soluble poisons.

In many of the cases bacteria are found in immense numbers in the ulcerations in the intestine and spread with them through the walls of the intestine. Where the ulceration is superficial bacteria are also found chiefly in the upper part of the mucosa, but as the lesion becomes deeper, bacteria are seen extending down into the mucosa in advance of the ulceration. Streptococci are especially abundant in these cases, and the character of the ulceration is suggestive of streptococcus infection.

V. The pathological lesions of the inflammatory forms of summer diarrhœas of infants are of serious nature and great variety. In many cases they are very extensive, not infrequently much of the entire thickness of the mucosa being destroyed; in other cases the intestinal lesions are slight and the more serious damage is recognizable in other organs.

VI. When the summer diarrhœa of infants passes into an inflammation of the stomach and intestine, it is no longer a mere affection of the gastro-enteric canal, but a general infectious disease or intoxication in which other organs of the body participate, either as the result of invasion by bacteria, as is often the case in the lungs, or from the effects of poison absorbed from the intestine.

VII. A correspondence between the clinical features and the bacteriological findings and anatomical changes exists in many cases, so that three principal forms of summer diarrhœa of infancy may be distinguished, *viz.*, dyspeptic or non-inflammatory diarrhœa, streptococcus gastro-enteritis, and bacillary gastro-enteritis.

Dyspeptic diarrhœa is free from the phenomena of inflammation, and is characterized by lumpy acid stools which contain no leucocytes or epithelial cells, and have among the bacteria chiefly bacilli coli communes, with a few bacilli lactis ærogenes. This is the mildest form of summer diarrhœa, but it frequently shows a tendency to progress further, and is often the first stage of the inflammatory forms of the disease.

Streptococcus gastro-enteritis is characterized by symptoms



of a general infection, extensive ulceration of the intestine partaking of a suppurative character, frequent slimy stools which contain great numbers of leucocytes, with the predomination of streptococci, although it is rarely, if ever, a pure streptococcus infection. In a few instances streptococci so largely predominate in the wall and contents of the intestine, that no other organism can be considered as having an important bearing on the affection. In most cases there are a great number of bacilli with the cocci, and their activity is probably more or less felt, although the prevailing influence is exerted by streptococci. There is often a considerable difference in the course of the disease in cases having the characteristic features of a streptococcus infection some patients responding readily to treatment, while others are not influenced by it in the slightest degree and continue steadily to grow worse until the disease reaches a fatal termination. It is probable that the streptococci found in these cases are not always of the same species.

Bacillary gastro-enteritis is characterized by a general toxic condition, less extensive inflammation and ulceration in the intestine, more or less frequent watery or pasty stools, containing but few, if any, leucocytes, and in which bacilli greatly predominate. But it is very seldom that one variety of bacillus is so greatly in excess as to preclude the attaching of importance to the presence of other organisms. As a rule a number of varieties of bacilli and some streptococci are found.

In typical instances any one of these three forms of the disease may be easily recognized, but there are many transitional cases which apparently do not belong to any of these forms and which are probably due to a more decided mixed infection, in which no one bacterium especially predominates, and the disease phenomena are influenced by the activity of a number of varieties.

Little is known of the effect of alterations in the quantity and quality of the normal ferments and juices of the alimentary tract upon the digestive disorders of infancy, but there are grounds for the belief that such changes may be of important consideration in these affections.

It is evident, then, that difficult problems have yet to be solved before we can hope for a scientific classification, and accurate knowledge of the nature of the summer diarrhœas of infants.



## Society Reports.

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### NEW YORK ACADEMY OF MEDICINE—SECTION ON PEDIATRICS.

Meeting of January 7, 1897.

WALTER LESTER CARR, M.D., CHAIRMAN.

#### THE PREVENTION OF THE SPREAD OF CONTAGIOUS DISEASES.

DR. HENRY DWIGHT CHAPIN read a paper with this title. He said that according to Prudden, an infectious disease is one which is caused by the invasion and reproduction within the body of pathogenic micro-organisms; not necessarily an invasion by bacteria, because in one case at least, malaria, the invading pathogenic micro-organism is not a bacterium, but belongs to an entirely different class. According to the same author, the contagium in any infectious disease is the particular pathogenic micro-organism itself, whose advent in the body ushers in those reactions of the body cells which we call disease. An infectious disease is contagious when its contagium can be freed from the body of the diseased person, and by different means conveyed to the body of another in a condition capable of lighting up the disease anew. It was well-known, the speaker said, that the virus of scarlet fever and diphtheria clings to the person and clothing, and that, on the other hand, measles and whooping-cough are volatile poisons, and hence are not so easily kept within narrow limits. In order to destroy the germs, the disinfectant employed must come directly in contact with the microbe proteid. Experiment had shown that among the many disinfectants known to physicians, methyl violet was one of the most powerful. He had found it useful as a spray to the throat in those cases in which the diphtheria bacilli persist for a long time after the disappearance of the membranous exudation. Such an application is not only effective, but is non-irritating. Mr. Thomas F. Raven, in 1886, had brought forward some interesting facts, which he had been able to corroborate by his own clinical experience. For instance: A short incubation period precedes, as

a rule, a sudden, sharp illness with a long-continued infective power, and characterized by certain sequelæ and a marked tendency to relapse. It might, indeed, be stated as an axiom that duration of incubation and duration of infection bear an inverse ratio to each other. With a long period of incubation, the infection is developed early and ceases early; on the other hand, with a short incubation period, the infection develops more slowly, so that even after the onset of the affection there may be a period when the danger of disseminating the disease is small. In brief, the rule was: Long incubation, early and short-lived infection; short incubation, late and long infection.

As regards the measures to be taken to limit the spread of contagious diseases, Dr. Chapin said that in private practice, whenever possible, the patient should be kept in a room on the top floor of the house, and all superfluous articles of furniture should be removed from the sick-room. To more effectually shut out the room from the rest of the house, and more especially to serve as a reminder to the other inmates, it was well to wet a sheet with some disinfecting solution, and fasten it across the door. The nurse should not mingle with the rest of the family. It was important to keep the room sufficiently warm to admit of having free ventilation. When one of the family, as the mother, was compelled to attend the sick person, she should wear a loose wrapper in the sick-room, and should discard this on leaving the room. It was desirable that the person should be placed on a cheap cot, which could be readily cleansed or destroyed after the sickness. A matter often overlooked, yet one capable of being carefully attended to, even in the humblest apartments, was the disposal of the discharges from the patient—*e. g.*, from the nose and throat in diphtheria. The best plan was to receive these on pieces of cheese-cloth, which should then be burned. It was often difficult to say just when it was safe to allow the patient to again mingle with healthy persons, and this was especially true of diphtheria, for it was now known that the diphtheria bacilli not infrequently lingered in the throat and nasal passages long after the disappearance of the membrane. While of course it was a safe rule not to allow the person to mingle with others until cultures from the throat failed to show the presence of these bacilli, he had never observed infection disseminated if quarantine were kept up for a week or two, and the parts were kept cleansed with some disinfectant solution. An excellent

and economical disinfectant for general use could be made by dissolving four ounces of sulphate of zinc and two ounces of common salt in a gallon of water. Spoons, cups, and all feeding utensils, should be kept constantly standing in this solution, but all articles, after being taken out of it, must be thoroughly boiled. Quilts, comforters, pillows, and the like, should be well shaken on the roof, and then given a prolonged exposure to the fresh air and sunlight—two harmless yet most potent disinfectants. The furniture, floors and walls, at the final disinfection, should be cleansed with a 1-20 solution of carbolic acid, or a 1-100 solution of corrosive sublimate. Where the walls were papered, they could be cleaned by being rubbed down with stale bread crumbs. While there was some difference of opinion regarding the efficacy of sulphur fumigation, it certainly sweetened the room, and necessitated a very thorough airing of the apartment, and hence it had considerable in its favor.

The speaker said that in endeavoring to prevent the spread of contagious diseases in city tenements, one was constantly hampered by the fact that no proper provision could be made for the well children in the family. If the city authorities would provide in various sections of the cities, "refuges" for such well children, an important advance would be made. Probably the most potent factor in spreading contagious diseases among children was the school. The most glaring defect, perhaps, in most schools, was the arrangements for caring for the children's wraps and outer clothing. In some of the more crowded schools the back seats are utilized for this purpose, but in the larger number hot and close wardrobes are provided, so that here is to be found an excellent culture-bed of disease. As an indication of the important part played by the schools in spreading contagion, the speaker quoted from a recent report of Dr. George S. Lyon to the Board of Health, which stated that of 37 cases of measles developing in a restricted neighborhood, 13 had been traced to a parochial school, 2 to a public school, and 7 to a kindergarten.

The recent plan of having all the schools inspected daily by physicians employed by the Board of Health, was alluded to and highly commended.

DR. GEORGE B. FOWLER, the Health Commissioner, in referring to this same subject, said that it had been found impossible to obtain a sufficient appropriation at present to admit of establishing such a system of daily inspection of the schools in a way

that would admit of giving the inspectors proper remuneration, but it had been thought better to make the attempt to do something in this direction. According to the plan contemplated, each inspector would be called upon to give but a short time each day to this work, and he would find the experience a valuable one.

DR. C. S. BENEDICT said that the necessity of stringent rules and careful inspection should be apparent, when he stated that he had that very day written to three physicians informing them that the three cases of scarlet fever that they had reported as free from infection had been seen by the Board of Health inspectors, and had been found freely desquamating. He felt sure that much more good could be accomplished by removing *all* cases of contagious disease from the tenement-houses to suitable hospitals, than by the establishment of "refuges" for the well children.

DR. JOSEPH E. WINTERS said that these efforts of the Health Board were exceedingly praiseworthy, but he was of the opinion that it would be found exceedingly difficult, if not impossible, to put in practice effectively the new system of school inspection.

DR. E. G. JANEWAY said that before complaining at the stringency of the measures carried out by the Board of Health, one should weigh the matter carefully. Undoubtedly there had been some ground for complaint at the long time quarantine had been maintained in some cases of diphtheria, owing to the fact that the diphtheria bacilli were present for an unusual length of time after the subsidence of the local manifestations of the disease. But was it not better to err on the side of safety?

WILLIAM L. STOWELL, M.D., *Secretary.*



## THE PHILADELPHIA PEDIATRIC SOCIETY.

Stated Meeting, January 12, 1897.

J. P. CROZER GRIFFITH, M.D., PRESIDENT.

DR. FREDERICK A. PACKARD presented a case of dilatation of the stomach. The patient was a school boy fourteen years old. There was no family history or previous personal history bearing upon his condition. His mother says that since he was one year old his abdomen has been extremely large, particularly in the upper zone. He complained chiefly of dyspepsia, occasional vomiting with a large amount of vomitus, occasional attacks of diarrhoea with offensive movements, and during the past summer a fleeting attack of jaundice. He is much troubled by shortness of breath on exertion. There has been at no time any sign of any growth pressing upon the pyloric orifice of the stomach. The case is probably one of congenital dilatation of that organ. By combined auscultation and percussion the stomach is readily outlined as being one of extremely large size, reaching from the lower border of the third rib to the umbilical level in the left vertical nipple line, and extending posteriorly to the posterior axillary line. As nearly as can be determined the pylorus lies in the right vertical nipple line. The heart is considerably dislocated, the apex being under the third rib. The heart itself is normal. Dr. Packard said that his first thought on seeing him was that it might be a case of congenitally dilated colon, somewhat like the specimen removed by Dr. Formad which is at present in the Mütter Museum. Auscultation and percussion show it to be entirely independent of the transverse colon, while the symptoms are gastric rather than intestinal. On one occasion when he came to the Out-Patient Department of the Pennsylvania Hospital, at 11 A.M., a seidlitz powder was given to him in two portions and there was absolutely no difference in the stomach tympany at the time. Suddenly at five o'clock that afternoon the boy became pale and faint and complained of fullness in his stomach. The mother states that the abdomen was distinctly more swollen than usual, the fulness being almost entirely confined to the upper portion. We have never been able to see peristaltic waves, even when we tried

electricity and the external application of cold to the abdomen. The test of absorptive power by the administration of potassium iodide and testing the saliva with starch paper, and the examination as to motor power by salol showed that neither of these departed from the normal. The surer test of these functions by the use of the stomach-tube in the early morning could not be practiced, owing to the fact that the boy lives at a remote and rather inaccessible portion of the city. The treatment adopted has produced quite decided improvement in his symptoms and possibly in the size of the organ. His diet has been carefully regulated, a bitter tonic with sodium bicarbonate has been given before meals, and he has had two seances each week, with a strong, slowly interrupted faradic current. The use of the button electrode within the stomach has not been used, but might be of value.

#### DISCUSSION.

DR. E. E. GRAHAM.—I believe this is a case of dilatation of the stomach. I have been fortunate enough to see a number of these cases and have been struck by the fact that the prognosis is more favorable than one would suppose from a study of text-books. I have had continuously under my observation a case that was reported by Dr. Hare in Keating's *Cyclopædia*. The symptoms in that child were evidently classical at the time Dr. Hare wrote the article. The child has apparently grown up to its stomach and at present suffers little if at all. This condition often occurs in overfed bottle babies, whose stomachs are sometimes dilated temporarily to an unusual size.

DR. S. SOLIS-COHEN.—If the stomach has not been examined with a diaphane, it would be interesting to make such an examination. This method is useful in delineating the upper and lower curvatures, but not so satisfactory in marking out lateral aspects.

THE PRESIDENT.—It seems to me very likely that the condition of dilatation of the stomach is more common than we imagine, particularly in rickety infants. It is certainly known, as shown by autopsy, that dilatation of the stomach may occur in rickets, and it is very probable that the big belly of rickety children, which we put down as a rule to intestinal catarrh, is due in part, at least, to a dilated stomach. There is no reason why the

atony and dilatation taking place in the intestine should not extend to the stomach as well.

DR. PACKARD.—I carefully inquired in regard to the possibility of rickets, and also in regard to any marked digestive disturbance during the first year, and I could find no cause to suspect the presence of either.

DR. ALFRED STENGEL presented a case of chorea, followed by arsenical neuritis. (See page 183.)

### DISCUSSION.

DR. MORRIS J. LEWIS.—The case has interested me very much. It was under my care in the Orthopædic Hospital. My almost invariable rule is to put all cases of chorea under increasing doses of arsenic, generally beginning with three drops three times a day. I have given arsenic so often in chorea that I have grown to look upon it as a safe remedy in childhood. Ten drops three times a day I do not consider a large dose. I have often seen it exceeded, not only without harm but with decided benefit, and this is the first case of arsenical neuritis, from the use of the drug in chorea, that I have seen.

DR. S. SOLIS-COHEN.—I should like to ask what was the manner of increasing and decreasing the dose of arsenic, and whether they have observed that toxic symptoms occur more readily when the dose is increased slowly and decreased abruptly, than when it is increased rapidly and decreased slowly.

DR. LEWIS.—I always give arsenic in increasing doses of one drop a day. I increase the dose until toxic effects, in the form of œdema of the eyelids, or of gastro-intestinal irritation appear, when I instantly fall back to the doses taken about a week before, to increase again until the same symptoms reappear.

DR. COHEN.—It is my experience that in adults and in older children, there is much more likely to be disturbance from arsenic if its use is stopped suddenly after long continuance than if withdrawal is gradual.

DR. A. A. ESHNER.—It was my privilege to see this case and I am inclined to agree with the diagnosis of peripheral neuritis. One point, however, becomes thus rather difficult of explanation, that is the presence (at times exaggeration) of the knee-jerks. I should under ordinary circumstances expect that with preserva-



tion of sensibility and with interference with the nervous paths, through the anterior roots of the spinal cord, in which pass motor and trophic fibers, with this interruption in the reflex arc, there should be rather absence or enfeeblement of the knee-jerks. In the absence further of sensory changes, it seems that the differentiation between peripheral neuritis and anterior poliomyelitis becomes exceedingly difficult, because the symptoms under these circumstances are all substantially the same. In peripheral neuritis the lesion is simply in the periphery of the lower portion of the motor tract, while in anterior poliomyelitis it is in the spinal or central portion of this tract.

DR. STENGEL.—He has made some improvement. Undoubtedly this poisoning did occur with a very proper therapeutic dose, and in cases of chorea I have often given a great deal more than ten drops three times a day. As far as the mode of administration is concerned, I can see no indication from a search of literature that one way of giving the drug is more trustworthy than another way. Perhaps gradual ascending doses are safer because patients get accustomed to them. Most cases of arsenical neuritis get well if the patient is not suffering with pronounced constitutional manifestations of arsenical poison. As to the diagnosis in this case, I agree with what Dr. Eshner says, and I find myself on two very uncomfortable horns of a dilemma. There is evidence in favor of both of the diseases named. The question is between arsenical neuritis with preserved knee-jerk and sensation, and poliomyelitis with knee-jerks that are sometimes very much exaggerated, and legs that are not very much atrophied and with a bilateral disease that is almost symmetrical on both sides. The latter is more difficult to explain than a neuritis with some deviations from normal course.

DR. C. S. POTTS presented a patient with progressive neural atrophy. The knee-jerks and plantar reflexes were both abolished, and the typical deformity of talipes cavus existed. He stated that there have been but three such cases reported in this country.

DR. M. H. FUSSELL presented two cases of cretinism. Both patients were males, one six years old and the other eleven. In the youngest patient the family history was negative. He was three years old before he began to talk, but has lately improved rather rapidly in speech. His symptoms were typical of cretin-



ism. There was no goitre; all the long bones were bowed, the joints enlarged, the skin thick and rough. He first came under observation September 2, 1895. He was then given one grain of thyroid extract three times a day for three weeks, and became better and brighter immediately, and increased in weight and size progressively. He has gained six inches, but during the past few months growth has not been as rapid as at first. He now seems in a really normal condition.

The second case gained  $6\frac{1}{2}$  inches under thyroid treatment. The child was feeble until two years old. He was dull mentally, and did not smile or walk until after three years. He did not talk until he was eight years old. His symptoms all improved markedly as the result of the ingestion of thyroid three times a day, in one grain doses. Dr. Fussell thought these cases might properly be classed with those spoken of by Horsley, which are born with but few if any signs of disease, and gradually become cretins.

DR. H. B. CARPENTER presented a patient with cretinism, a female, three years old. She did well until she was one year old but then seemed to stop growing. She could say only a few words, and when first brought to the dispensary of the Children's Hospital three months ago, presented a typical picture. There was no sign of the thyroid gland. There was marked œdema of hands and feet; they were cold and mottled. She is 26 inches in height. Half a drachm of phosphate of soda three times a day and one quarter of a grain of thyroid extract in glycerine, have been given her. Five days after beginning this treatment the mother brought the child back and said the child was brighter and better. The œdema after a few weeks treatment subsided. She now walks well, will ask for things she wants, the temperature is normal, the urine is normal, and she has now sixteen teeth; the tongue is also quite normal.

#### DISCUSSION.

DR. TULL.—A year ago I attended a woman, now dead, who was a middle-aged cretin. She has two nephews, both of whom I have attended, having also been present at their birth, and both of these children look as if they might have been the twins of those presented by Dr. Fussell. The mother of my patients presents a marked goitre.

DR. MILLER spoke of the importance of using a reliable preparation of thyroid extract, certain preparations now on the market been apparently inert.

DR. W. S. STEWART.—I have had in my experience of thirty years, four cases and I have noticed that the parents, if not blood-relations, have, at least, very similar characteristics and physical conditions. One cretin, whose parents were blood-relations, while an imbecile in other ways, was able to mimic to a certain extent the gait of a bow-legged man.

DR. A. E. ROUSSEL inquired as to what results had been obtained by the use of thyroid extract in cretins over twenty years of age.

DR. PRENDERGAST reported a case of cretinism and inquired regarding the effect of thyroid extract in exophthalmic goitre.

DR. RHEIN.—I have seen cases of imbecility, which, though not true cretins, presented a certain aspect of cretinism. The face and hands were puffy in appearance, the hair coarse, the scalp dry and scaly. In such cases, I think the thyroid extract should be employed in the hope of assisting mental development. In one case in which I ordered it, the results were encouraging.

DR. GITHENS.—I had under my care some years ago a child who ceased to grow at six months and remained that size for thirteen years. The myxœdematous condition was extreme. I commenced with five grains of dessicated gland twice a day but found it entirely too large, and reduced it so that one or two grains were given every two or three days. The effect was marvelous; the myxœdematous condition disappeared, the tongue returned into the mouth, the lips contracted, the face changed completely and the child, which up to this time had not been able to stand, walked, spoke single words, began to use words to express ideas and to stand and to begin to grow so that in six months it gained six inches.

DR. A. A. ESHNER.—There is now under observation at the Infirmary for Nervous Diseases, in the service of Dr. Wharton Sinkler, a cretin upwards of 32 years of age, who has been under treatment for more than a year with thyroid extract, in doses of 1, 2, or 3 grains, given once or oftener in the day. In this case there has been the usual disappearance of subcutaneous fat

or mucoid tissue, loss of weight, softening and growth of hair, return of perspiration, increase in growth, and improvement in intelligence. I should say that in the cases of maturer years, while the improvement is not so marked as in cases in young children, it is still very considerable.

DR. ROSENTHAL.—In Elwyn they have some cretins who, when they rise from the floor on which they spend most of their time, get up in a very peculiar manner, which resembles progressive muscular atrophy.

DR. GEORGE WOODWARD read a paper on “the chemistry of colostrum milk.”

DR. A. V. MEIGS, in discussing this paper, said that the difference in the actual chemical composition between colostrum and ordinary milk was probably not very great. The presence of the so-called colostrum corpuscles has for a long time been known, and it is also known that there are physiological differences between colostrum and ordinary milk.

Milk may for all ordinary purposes be said to consist of five ingredients, water, fat, casein (which includes all albuminoids), the lactose or sugar, and the salts. It is easy to ascertain the amounts of the water, of the fat, and of the salts, and chemists do not disagree in regard to the quantities of these three ingredients, but when it is attempted to decide the amounts of casein and sugar, the difficulty in milk analysis is reached and the differences of results obtained have been so great as entirely to satisfy my mind that most of the difference is due to faults in the methods. There is every reason to believe that milk is of reasonably stable composition.

My own method of analysis I believe to be accurate and I do not see why it is not a good one, although it is very simple in its principles. It takes about two or three weeks to carry the process through with a single specimen of milk, and therefore it occupies a large portion of time. I spent two years working at the subject and in the course of that time did not make a very great number of analyses. It has always seemed to me that the reduction of sugar by copper, or the estimation of the sugar with the polariscope, when we wish to determine the casein and sugar in milk, are unreliable methods. The method of Vernois and Becquerel, which has been more widely quoted than any other analysis of human milk, was to determine the casein by



adding acetic acid and rennet to the milk, which precipitated the casein. They then direct that the whole mass be thrown on a filter, and the clear filtrate was tested by the polarimetre of that day, an instrument probably very similar to the polariscope of to-day. This method is so inaccurate that it is easy to understand their overestimating the casein, because much sugar as well as casein must remain upon the filter. The estimate of the casein by difference instead of directly is most unscientific and almost certain to lead to erroneous conclusions.

The copper reduction method has been worked out much better and has been much more used in determining grape-sugar than ever has been done with milk-sugar and I consider any method which determines either one of the important constituents, casein or sugar, by difference, introduces a great element of liability to error.

DR. STENGEL.—The nitrogen of the milk is certainly not all proteid-nitrogen, though the amount of non-albuminous nitrogen is very small. It would seem to be desirable from the scientific point of view to know the exact quantity of each of the different proteid bodies found in the milk, but such an analysis would require a great amount of material, and such an expenditure of time that it may be doubted whether daily analysis could be carried out by a single person.

ALFRED HAND, JR., M.D., *Secretary*.

**Cardiac Arrhythmia in Childhood.**—Heubner (*Zeitschrift für klin. Med.*) claims that functional arrhythmia is much commoner in childhood than has been thought. A number of examples are described. The following classification indicates the most common causes: (1) Arrhythmia from poisoning, as by digitalis, stramonium, and opium. (2) From digestive disturbances (auto-intoxication and hydræncephaloid). (3) Diseases of the abdominal organs with vomiting, but without other evidences of auto-intoxication. (4) From infectious diseases, in the onset, the acme, or in convalescence. (5) Anæmia and nervousness. (6) From the irritation of intestinal parasites. (7) Arrhythmia after excitement, in sleep, and after bathing. (8) Idiopathic arrhythmia.—*American Journal Medical Sciences*.



## Current Literature.

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### MEDICINE.

**Holt, L. Emmett: Tuberculosis in Infancy and Early Childhood, With Special Reference to the Mode of Infection.**  
(*Medical News.* 1896. Vol. lxix., No. 24.)

It is not many years since tuberculosis was thought to be a rare disease in infancy; but we now know that it is quite as frequent as at any other period of life. While not common in private practice, in hospitals and institutions it is to be ranked among the common infectious diseases. In 1045 consecutive autopsies, from the records of the New York Infant Asylum and the Babies' Hospital, tuberculosis was found in but ten per cent. of the cases. The observations which the author presents are based upon a study of these autopsies, to which are added seventeen made elsewhere, or 119 in all. Of these cases, fifty-five died during the first year, thirty-five during the second year, twenty-one between the second and fifth years, and only eight were over five years old. In the following table are given the visceral lesions that were found:

ORGANS.	NUMBER OF CASES.	PER CENT.
Lungs, . . . . .	117	99.0
Pleura, . . . . .	69	58.0
Bronchial lymph-nodes, . . . . .	108	96.0
Brain, . . . . .	40	37.0
Liver, . . . . .	77	65.0
Spleen, . . . . .	88	75.0
Kidneys, . . . . .	46	39.0
Stomach, . . . . .	5	4.0
Intestines, . . . . .	20	37.0
Mesenteric lymph-nodes, . . . . .	38	35.0
Peritoneum, . . . . .	10	9.0
Pericardium, . . . . .	7	6.0
Endocardium, . . . . .	1	0.8
Thymus, . . . . .	3	2.5
Supra-renal capsules, . . . . .	2	1.7
Pancreas, . . . . .	3	2.5

*Intra-uterine Infection.*—This was not demonstrated in any of these cases, although it is highly probable in all of the cases, five in number, which died during the first three months of life. Three of these were under two months old, one being but twenty days, and two but seven weeks old. The child who died on the twentieth day was born prematurely of a mother who was suffering from advanced tuberculosis. The mother died shortly after the child, the autopsy showing in her case, besides the lesions of general tuberculosis, a tuberculous endometritis. The child had cheesy, bronchial glands, and miliary tubercles and small tuberculous nodules in the lungs, but none in the alimentary tract, the spleen, or the liver.

From all the evidence available, it would appear that the child often escapes, though the mother may be suffering during pregnancy from active tuberculous disease. With latent disease, the chances of such infection of the child are certainly small.

In most of the cases where children die of tuberculosis during the first two or three months of life, the probabilities are very strongly in favor of intra-uterine infection. In all later cases, however, it is much less probable than that infection occurred subsequent to birth.

*Infection through the Alimentary Tract.*—The source of primary infection of the alimentary tract may be either the milk of a tuberculous nurse, or tuberculous cow, or tuberculous meat.

All of these the author believes to be extremely rare. Their importance in the etiology of tuberculosis in infancy he thinks has been very greatly exaggerated. In the series of autopsies above given, there was not one in which a careful study of the lesions made it at all probable that the primary lesions were of the stomach or intestines, and in sixty-three per cent. of these cases the intestines were not affected at all. In the cases where the stomach and intestines were the seat of tuberculosis, with very few exceptions, the disease has been only slightly marked in that locality, while very advanced in the lungs and bronchial lymph-nodes.

The great infrequency of primary infection through the alimentary tract is also shown by the experience of Northrup, who, in a series of 125 autopsies upon tuberculous children, mainly infants, found but a single case in which the affection appeared to have occurred in this manner, as against eighty-eight in which it was clearly through the bronchial lymph-nodes.

That bacilli may pass the mucous membrane of the intestine without producing disease in it, is not impossible. The author says that he has been looking for years for a case in which the mesenteric glands were manifestly tuberculous, without tuberculous ulceration of the intestine, and has yet to find the first one. Often the ulcers have been so small and so few as to be discovered only by a most careful search, but, so far, some have always been found.

The intestines are more frequently the seat of tuberculous disease in older children than in infants, as is shown by the Reports of the Pendlebury Hospital of Manchester, England. In 131 autopsies on cases of tuberculosis in children, most of whom were over three years old, the intestines were involved in fifty per cent. of the cases, against thirty-seven per cent. in the author's series of autopsies.

Considering how extremely susceptible are the intestines of infants to other forms of infection, this contrast is rather surprising. The explanation of the difference seems to be this: Intestinal infection is nearly always secondary to disease of the lungs. Infants usually die from the more rapid tuberculous processes in the lungs or brain before there has been time or opportunity for intestinal infection to occur. The opportunities for such infection depend upon the number of bacilli which are coughed into the pharynx and swallowed. In infancy this number is small, because so many die of tuberculous pneumonia or meningitis before extensive softening in the lungs has taken place. In older children the slower course of the pulmonary disease gives ample time for intestinal infection, while the more extensive softening and excavation are accompanied by discharge of a much larger number of bacilli.

Unless the udder is the seat of disease, the number of bacilli contained in cow's milk is so small that infection from this source can hardly be considered as anything more than a possibility. The same may be said of the milk of tuberculous women. From tuberculous meat, also, the danger is a very small one, as tuberculous deposits in the muscles are extremely rare. Bollinger was unable to induce tuberculosis in animals by feeding them upon the expressed juice of such meat.

There is little doubt that tubercle bacilli, in small numbers, may be introduced into the stomach with the food almost with impunity, traverse the intestinal tract, and be discharged in the

stools without ever attaching themselves to the mucous membrane. Unfortunately, those entering the respiratory tract do not have such a ready means of exit.

Considering the susceptibility of the intestines in infancy, the fact that in sixty-three per cent. of these autopsies they were not involved at all, and that where intestinal lesions were present, they were, with but few exceptions, slight, and that the marked cases were, in every instance, associated with extensive breaking down of a tuberculous pneumonia, the conclusion seems warranted that primary infection of the intestines in infants and young children is among the very rare occurrences in medicine, and that conditions exist in the alimentary tract, in consequence of which the bacilli do not gain a foothold unless they are introduced in very great numbers, as happens as a result of cavity-formation in the lungs.

*Infection through the Respiratory Tract.*—A study of the lesions of infantile tuberculosis, as shown in the table, proves conclusively that infection almost invariably occurs through the respiratory tract. In ninety-nine per cent. the lungs were diseased, and in ninety-six per cent. the bronchial lymph-nodes. The mucous membranes of the respiratory tract in infancy and early childhood furnish conditions even more favorable for infection than those of adults. It is by breathing an atmosphere containing tubercle bacilli that most infants get the disease.

The bacilli entering with the inspired air may be arrested either upon the mucous membrane of the upper or lower respiratory tract—in infancy usually the latter. They may induce disease in the walls of the finer bronchi, or may pass through to the lymph-nodes, where they may be for the time arrested. The lungs are affected in a large number of cases, probably in the majority, secondarily to the involvement of the lymph-nodes. Sometimes this takes place by direct extension, through contiguity; sometimes by the opening of a small bronchus or blood-vessel by ulceration, whereby the bacilli are rapidly disseminated through the lungs.

The important part played by the bronchial lymph-nodes in tuberculous infection of the lungs has been understood for some time. It was well brought out in an admirable paper by Northrup in 1891.

It is not the purpose of this paper to show that there is no danger of tuberculosis through milk, for the author holds most



strongly that all cows whose milk is used for food, whether for infants or older children, should pass the tuberculin test; and further, that when the milk supply is from a doubtful source, milk should be heated to a sufficient degree—167° F.—to destroy such bacilli, should they be present. But when this source of danger has been entirely removed, he believes we will have accomplished very little in the prevention of tuberculosis.

Vastly more important is the enforcing of stringent rules regarding the isolation of persons with active tuberculosis, both in the home and the hospital, the careful destruction of the bacilli in the sputum from such cases, the disinfection of apartments after attacks, and most of all, the early diagnosis of the disease in all persons who are brought into close contact with children, whether as nurses, teachers, or companions.

#### CONCLUSIONS.

1. Intra-uterine infection in cases of tuberculosis is very rare, the child often escaping even when the mother is suffering from active disease in an advanced form.
2. Infection through the alimentary tract is also very rare, and will not explain more than one or two per cent. of the cases.
3. The distribution of the lesions in tuberculosis of infancy and early childhood points conclusively to infection in the vast majority of cases through the respiratory tract.

**Griffith, J. P. Crozer: Relapse in Scarlet Fever.** (*Quarterly Medical Journal, Montreal Medical Journal.* 1896. Vol. xxv. No. 2.)

The question of relapse in infectious fevers, although universally admitted in typhoid, has not been the subject of much attention in scarlatina. In 2,000 cases admitted for scarlatina to the Bagthorpe Fever Hospital, fourteen suffered from second attacks whilst actually under observation. In these cases, the second attack was marked by a rash, lasting from one to four days, sore throat and fever.

Comby relates briefly two cases of relapse in children of four and six years. In the first case a scarlatinal rash appeared during the period of desquamation; in the second, on the fourteenth day of a normal case, fever and rash appeared.

In estimating the frequency of relapse, several sources of error

are present. An erythematous rash is common in such complications as nephritis or tonsillitis. Rendu interprets the rash as a streptococcus manifestation, and states that a pultaceous angina is always present, proving a source of secondary infection. Such erythemas, however, pass off rapidly, and may be excluded in the cases observed by Griffith.

The question as to whether the second attack is an auto-infection or due to a second infection from neighboring cases is referred to. If the latter supposition is correct, it would be an argument against placing large numbers of cases in a ward.

**Johnston, Wyatt: The Bacteriological Diagnosis of Diphtheria.** (*Montreal Medical Journal*. 1896. Vol. xvi. No. 15.)

After a careful review of the methods pursued and the results attained by this method of diagnosis, the author concludes as follows:

1. The culture method enables a positive diagnosis to be made in 90 per cent. of all cases of diphtheria when seen early.
2. The significance attaching to a negative result depends entirely upon the length of time which has elapsed since the onset of the disease, and the absence of bacilli from a case which has lasted often four or five days does not prove that it is not diphtheria; in any case where the course of disease makes it likely to be diphtheria, repeated re-examination should be made.
3. In severe cases of suspicious angina, it is advisable not to delay the preliminary dose of antitoxin in order to learn the result of the bacteriological examination.
4. The greatest value of the bacteriological examination is in determining the necessity and the duration of isolation and quarantine, and if cases continue to appear, the throats of all persons exposed to contagion should be examined whether they show signs of disease or not. A swabbing to be taken post-mortem in all cases of death from croup.
5. The patient should not be released from quarantine and the final disinfection of the premises should not be done until the bacilli have disappeared entirely from the affected part.
6. The bacilli have been shown to infect articles of clothing, furniture, etc., and these should be thoroughly disinfected, preferably by steam under pressure, and solutions of mercuric

chloride. Fumigation by sulphur is unreliable in the majority of cases as commonly carried out.

7. Cases showing a heavy growth of bacilli, on serum at twenty hours, not quite of the typical Klebs-Löffler type, should be regarded as suspicious and strictly isolated until their non-diphtherial nature is clear. In order to avoid the conflict between the opinions of the medical attendant and the bacteriologist, it is preferable when a case, diagnosed clinically as non-diphtheritic, shows a growth of bacilli, that the further tests of acid production and pathogenes are to be applied, the medical attendant being informed of the suspicious nature of the case and of the necessity of isolation pending more thorough bacteriological study. This would remove a common cause of friction between the medical attendant and the Health Officer, and lead to the more careful study of the doubtful cases.

8. In spite of the use of antitoxin and the great benefits resulting from it, the mortality of diphtheria has greatly increased in Montreal during the past year.

**Finley, F. G.: Chronic Polyarthrititis in a Child.** (*Montreal Medical Journal.* 1896. Vol. xxv. No. 2.)

The patient, a girl of eleven years, was admitted to the hospital March 1, 1896, for pain and stiffness of the joints.

The mother attributes the onset of the illness to a kick on the right ankle in May, 1892. There was no ill effect at the time, but two months later she began to limp and the ankle became swollen.

The disease was then regarded as of a tubercular nature and a plaster of paris bandage was applied for several weeks in August and again in March, 1893, but without very much benefit.

In the autumn of 1893 the right knee became swollen, followed by the metacarpo-phalangeal articulations and a little later by the wrist, left ankle and left knee. After Christmas the child was unable to walk. She has since been confined to the bed and the legs have gradually become drawn up and contracted. The neck became painful and the head twisted to the left in December. The swelling passed away from the joints in 1894, leaving them stiff and useless.

Early in 1894 she had an attack in which there was loss of



power and sensation in the right arm for three months, but not accompanied by pain.

There is a history of frequent exposure to cold and starvation. There is no rheumatic or tubercular history in the family.

*Present Condition.*—The child is well nourished and of good color; pulse 108; temperature 99°; respiration 24. The head is turned downwards and to the left side; there is marked diminution in the rotatory movements of the head with rigidity of the left sterno-mastoid and trapezius muscles; flexion and extension are free. The joints affected are the wrists, elbows, ankles and a few of the small phalangeal joints of the fingers and toes. Many of the joints are painful and tender. The wrists are slightly flexed and swollen. There is much rigidity and stiffness and the movements are greatly limited, flexion and extension being performed through a few degrees only. The right elbow is stiff, it cannot be extended beyond a right angle and there is a slight crepitating sensation on movement. In the left elbow there is also diminished movement, but to a much less extent.

In the lower extremities the hips and knees are contracted. Both ankles are thickened and rigid and the right foot much everted and flat.

The proximal phalangeal joints of the first, second and third fingers on the right side and the corresponding joints of the first and second fingers of the left hand are swollen, thickened and give the impression that the bones are enlarged. Roentgen photograph, however, shows that the bones are normal and that the thickening is therefore confined to the soft parts. The left thumb as shown by the photograph presents a forward dislocation of the two terminal phalanges. To the touch the dislocations give the impression that there is a bony outgrowth in the neighborhood of the joints. Some of the fingers have a slight deflection to the radial side, and the terminal phalanx of the right middle finger is freely movable from side to side. There are no Heberden's nodes. The skin over the backs of the wrists and hands and on the front of the ankles is glossy and tense.

The heart, lungs and other organs are normal. The urine contains neither albumen nor sugar.

The patient has now been in the hospital for three months, being treated with iron, cod-liver oil and gentle extension of the



lower extremities. There has been marked improvement in the movements of the hand and head, and she can now use the fingers for sewing or rolling bandages. Pain and tenderness have almost disappeared.

**Ireland, W. W.: Insanity in Children.** (*British Medical Journal.* 1896. No. 1865.)

The author first explains the difference between the nerve tissues and mental characters of children and adults, and shows how this makes a difference in the symptoms of insanity in each. If a man grew up with the feelings and views of a child persisting, he would be regarded as insane. The purpose of education is to substitute some ideas for others, to check some propensities, favor the growth of others, and in general to teach the youth how to regulate his actions in regards to other beings and the outer world. Thus sanity might be regarded as something acquired or something implanted in a man, and perhaps not always something entirely according to reason. At certain stages of civilization some moral precepts are questionable and some of our conventional notions are scarcely wise. The weakening of the mental faculties in idiocy is sometimes unequal. In some idiotic lunatics there is great motor restlessness and inclination to run about or dash themselves against the walls or floor. With children of more intellect there is strange or incorrigible conduct.

Insanity in children uncomplicated with idiocy is a very rare disorder. It is difficult to collect a sufficient number of cases to generalize about the symptoms. Amongst the predisposing causes is a neurotic heredity; among the exciting causes are unhealthy matters in the blood following nephritis, or intoxication induced by the use of diseased rye or maize, ergotism and pellagra. Injuries to the head are often assigned by the parents as the causes of insanity.

Dr. Ireland then describes melancholia in children, which is generally of a simple character, without delusions, and he quotes statistics to prove that suicide is increasing in England with children, which might be attributed to overpressure in education, acting upon pupils of a weakly or neuropathic constitution. He gives a description of a case of a little girl, aged eleven years, affected with melancholia. This was accompanied with mitral

insufficiency. There were attacks of loud wailing, generally accompanied by tachycardia and sometimes by bleeding at the nose. The concurrence of mitral incompetency and melancholia has been already noticed by several alienists such as Mickle, Savage and Girandeau. The child entirely recovered from the mental affection in less than a year.

**Knapp, Philip Coombs: Nervous Disease in Childhood and Overwork at School.** (*Boston Medical Journal*. 1896. Vol. cxxxv., No. 2.)

To determine this important question the author reports observations made on 150 children suffering from nervous disease. In only twenty-one of these cases did school-work seem to have any material influence in producing the disease. Apart from cases of chorea, some of which seemed to depend upon overpressure at school, the author concludes that overwork in school does not seem to have been a factor in causing nervous disease in this series of 150 cases. This corroborates, so far as a limited number of cases can, the opinion of Charcot that up to the age of fifteen, and in the primary and grammar courses, school overwork is rare. The child will work—will pay attention—up to a certain point; but up to that age he is not sufficiently self-conscious, and he has too little ambition to make him overdo. When he reaches the limit of his endurance he stops work and pays attention to something else; he does not spur himself on to work beyond his strength. “The child remains passive; when he does not wish to work, he does not work, and overwork is produced only by an effort of the will.”

This rule, which has also been confirmed by Mr. Galton, holds in the majority of cases. Now and then we see a precocious child, especially a girl, who is distinctly harmed by too much study; but those cases are rare, especially in children of the out-patient class. Above the age of fifteen, however, it is another story. In hospital cases the number of children who go to school beyond that age is very small. We see, however, in private practice, especially in girls and young women, many cases. After the age of fifteen, and during the high-school course, the conditions are altered. The period of puberty has begun, with its physical strain and its physical changes. The pupil has become more self-conscious, his ambition is aroused,

the importance of preparation for the work of life begins to be appreciated, and ambition for intellectual victory over his comrades is awakened. The curriculum becomes more crowded and more absurd, and the stress of examinations greater. The youth keeps at his work, and is less ready to drop it when he begins to grow tired. Over-strain results, and, if other factors unite, break-down may follow. From obvious reasons—a less hygienic life, limited exercise, and the development of the menstrual function—this break-down occurs most frequently in girls. Before the period which may be roughly marked by the fifteenth year, overwork in school is much less common, and rarely occasions nervous disease.

**Frye, Maud J. : The Estimation of the Number of Bacteria in Milk.** (*Medical Record.* 1896. Vol.1., No. 13.)

The examinations of milk which this paper reports were undertaken on account of the writer's interest in pediatrics, the object in doing the work being to learn, so far as such bacteriological test would teach, the fitness of milk from various sources for infant feeding.

Some points which may be noted are these:

Certified milk contains comparatively few liquefying organisms, cultures occasionally showing none at all. The hay bacillus and the potato bacillus, both liquefying organisms common to milk, and both by some accused of an active part in certain digestive troubles of infancy, may be said to be present in this milk in small numbers, if at all.

No count is more than approximately correct. All estimates probably fall far short of the actual number of bacteria present.

Counts, to be of value in comparing the purity of various kinds of milk, must be made under identical conditions as regards medium, temperature of room, and time of counting.

This work was begun with but little faith in its value, but as it went on the conviction grew that by ascertaining the number of bacteria in a given quantity of milk, we had a valuable test as to its fitness for food; the original amount of contamination, the length of time the milk has been kept, and the conditions of temperature and cleanliness determining the luxuriance of bacterial growth.



## HYGIENE AND THERAPEUTICS.

**Carmichael, James: The Indigestion of Breast Babies.**  
(*Edinburgh Medical Journal.* 1896. No. 494.)

For many reasons less attention has been paid to the gastrointestinal affections met with in breast babies than in those nursed artificially. Breast milk is the natural, and ought to be the sole food of the infant, under physiological conditions, during the first year of life. Unfortunately there is too often a departure from the normal state, and the child, and perhaps also the mother, may suffer during the lactating period. The natural pride and instinct of the mother is apt to lead to the presumption that all is going well with her and the infant, when, perhaps, in reality she is not a good nurse, and the child is suffering more or less, and not thriving.

In America the question of infant feeding in all its aspects has received the well-merited attention which it deserves, and which it has not met with in this country. The greater prevalence of diarrhœal disease during the tropical summer of the American continent has stimulated study and research on this important subject. Milk laboratories have been established in the larger cities, and the feeding of infants has been placed on a comparatively sure and scientific footing. Owing to the researches of such men as Jacobi, Rotch, Holt, Lewis Smith, Meigs, and others, we are now furnished with scientific data to guide us in the study of the subject. In the author's own country the question of our milk supply is now receiving some attention from sanitarians, but there is as yet no ready means available to the general public of obtaining pure or properly sterilized milk on a large scale, nor of having milk analyzed or tested in laboratories established for the purpose. Whenever the milk of the mother is defective in quantity or quality, the child is apt to suffer. It does not thrive or grow at the normal rate. Instead of being plump and firm and happy, it is soft and flabby, and is always crying, and never appears to be satisfied. Its skin is harsh and dry. The tongue is somewhat red, often slightly furred. Vomiting is not infrequent from gastric catarrh. The stools are unnatural, and present various appearances depending on the quality of the milk. They are generally loose, and seldom have the natural mustard color or consistency; but are usually pale, and often of an ashy gray color, sometimes greenish, or mixed



gray and green. The soft curd of the mother's milk is present undigested in little granular-looking masses. There is an excess of mucous secretion, sometimes little streaks of blood. As a rule, indigestion of mother's milk is more frequently intestinal than gastric, diarrhœa being more common than vomiting. This appears to be largely due to indigestion of the fatty and proteid elements of the milk. Infants, in regard to their digestive capabilities, are but little men and women, and it is certain they have their idiosyncrasies likewise. The milk of a mother seems to be suited to her own child under physiological conditions.

These two cases are very ordinary ones, and typical of two of the conditions giving rise to indigestion in the infant. Irregular suckling is one of the commonest causes of indigestion in babies. It produces a milk too concentrated, which inevitably causes indigestion in the child. Regulation of the suckling is generally sufficient to give relief. Irregular suckling may be due to two principal causes. It may occur in cases where the milk is normal in quantity and quality, from bad habit on the part of the mother in being over-anxious about her child, and carelessly giving it the breast at irregular times or whenever it cries. The more frequent cause, however, is deficient quantity of milk. In this case the child is unsatisfied and gets the breast too frequently in consequence, with the result that the milk becomes too concentrated and causes indigestion. The remedy is the addition of some substitute feeding.

Inseparably connected with the question of maternal feeding is the no less important one of the artificial rearing of infants who are unable to obtain breast milk. The huge mortality of infants under one year is hardly reduced to a lower level than it was half a century ago, when in England and Wales no less than 76,328 children under twelve months died, out of a total of 350,101 deaths in one year. Want of breast milk and bad artificial feeding are largely responsible for this. Surely it is our duty, as a profession, to try and stem this tide of mortality. There is no way to attain this end but by education—medical education; and let us hope that in the near future we will be in a better position in this respect, and have greater facilities for showing good results in what, it must be admitted, is an important branch of preventive medicine, too much neglected.

**Cullerre: Incontinence of Urine and Its Treatment by Suggestion.** (*Archives de Neurologie.* Vol. ii., No. 7.)

Twenty cases are reported as cured by the treatment, two as improved, and two as not benefited. The conclusions drawn from the very instructive list of cases are: that incontinence of urine during childhood and adolescence is a neuropathic stigma, benignant as a rule, but sometimes the forerunner of more or less grave nervous affections; that the patients often show evidence of physical or moral degeneration; that it is hereditary, and sometimes a family affection; that the disturbance is psychical, analogous to some observed in hysteria, and may take hold of the imagination, thus aggravating the trouble by pre-occupation and auto-suggestion; and finally, that hypnotic suggestion is the most rational treatment, as well as the most efficacious. It is most successful in older children, and least so in subjects with a marked hysterical tendency. Pharmaceutical and surgical measures, when successful, are so, as a rule, because they act as indirect suggestion.

**Tuley, Henry E.: Treatment of Nephritis in Children.** (*Medical News.* 1896. Vol. lxix., No. 6.)

Few diseases of childhood require more prompt, vigorous, intelligent, and careful treatment. Three essential rules in the treatment must be recognized, viz.: (a) Relieve the kidneys of the extra work of carrying the transuded serum from the tissues, as well as the retained products of tissue metamorphosis usually excreted by the kidney and retained because of their damaged state; (b) endeavor, by intelligent medication and diet, to prevent further damage to the diseased organs; (c) restore the kidney to its normal condition.

In meeting the first indication, resort must be had to the compensatory emunctories, the skin and bowels, and at no age can we rely upon them more than during early life. Calomel is indispensable. It stimulates the liver to action, and by the increased flow of bile, the contents of the bowel are rendered more fluid and the elements to be excreted more soluble in the blood, thus proving less irritating to the kidneys. The salines are of great service as hydragogues.

Hot-air baths must be relied upon for their diaphoretic action, as pilocarpine is very uncertain and not to be depended upon. The best method of applying heat is by using an apparatus which

will supply hot-air under the bedclothes. This can be used continuously, as it does not cause prostration. Liquid ammonia acetatis is an efficient remedy in the stage of convalescence, acting beneficially upon the kidneys and the skin. The high tension in the arteries can be combated more efficiently by blood-letting than otherwise, its beneficial effect being seen upon the pulse, the nervous system, and the kidneys, by lowering the blood-pressure.

A very valuable agent is water, given, perhaps, plain after filtration or boiling, as young children take carbonated waters with reluctance. Given *ad libitum* and at regular intervals, if the patient does not call for it, it acts as a diuretic, without causing any irritation. If refused by the mouth, it acts well as enema if large doses are given.

**Variot: On Codeine as an Adjuvant to Dilatation of the Glottis in Croup.** (*Gazette Med. de Paris.* Vol. lxxvii., No. 28.)

Variot and Glover have proposed employing the O'Dwyer tube as a dilating catheter to overcome spasm of the glottis in certain forms of laryngeal diphtheria.

It has been found that by leaving the tube in the larynx three or four minutes, the very severe spasm and suffocation symptoms have disappeared, sometimes permanently. The method seems especially efficacious in children over two years, and when the pseudo-membranes in the larynx are not very marked. Children of this age are also less subject to laryngismus than younger infants, and the danger of recurrence of the spasm after dilatation is therefore somewhat less to be feared; furthermore, nervous sedatives must help to soothe the phrenoglottic nervous apparatus, and excellent results have been obtained by the administration of codeine after dilatation of the glottis by the tube. The drug seems to control the attacks and to prevent the recurrence of the severe dyspnœa, with its accompanying symptoms of suffocation.

**Albright, J. D.: The Treatment of Chorea.** (*American Medico-Surgical Bulletin.* 1896. Vol. x., No. 1.)

The author refers to the persistence of many cases of chorea treated by ordinary means without the use of tonics and constitutional treatment. He reports good results from such treatment alone in some long-standing cases. To meet the indica-



tions in this class of cases he has found Peptomangan to be the most effectual of any iron preparation that he has employed. This preparation is easily assimilated, produces no gastric disturbance, no checking of the enteric secretions, consequently no constipation, even when used for a long time, but improves the appetite, and by its action on the hepatic functions insures regularity in the stools. He reports the case of a girl of eleven who was suffering from chorea of long standing, who steadily and permanently improved under its use.

**Hill, Alfred: Diphtheria Conveyed by Animals.** (*Lancet*. 1896. No. 3811.)

Among matters calling for further observation and study in relation to the disease is the liability of animals, particularly of cows and cats, to attacks of the disease and their susceptibility to inoculation with cultures of the diphtheria bacillus. In these inoculations, except in the case of the cow, the bacilli are found only at the point of inoculation, and the constitutional effects are therefore probably due to the action of a chemical poison produced by the bacillus and carried into the circulation. This view is confirmed by the experiments of Roux and Yersin, who proved that a pure culture from which the bacilli had been removed by filtration was still pathogenic, and on inoculation by it, it actually produced the general symptoms of the disease. In the case of cats the danger of their communicating the disease to human beings consists only in contact or close association with them. The conveyance of the infection by cats, which Klein considers are susceptible to true diphtheria and capable of communicating it to each other and human beings, is worthy of careful consideration. It is consolatory to know that he considers it proved that fowls do not suffer from any ailment either identical, or intimately connected, with diphtheria. With cows there is greater danger, because, according to Klein, the cow suffers from a disease resembling diphtheria and the milk contains the bacillus, thus offering a remarkable exception to man and the other animals in which the bacillus is confined to the local lesion and neighboring glands. The bacillus, moreover, grows readily in milk, and milk is regarded, after many careful investigations, as a real source of danger. These facts present very vividly the danger contingent on the use of milk, because it



may be infected not only after, but also before, it is drawn from the udder.

The means to be employed in the prevention of diphtheria embrace notification, isolation, rigid exclusion of diphtheria cases from scarlet fever wards, disinfection of clothing, bedding, furniture, etc., strictly regulated school attendance, supervision of milk supplies and the boiling of all milk, removal of dampness, darkness, and other unsanitary conditions from sites and dwellings; careful observation and isolation of cases of sore throat, however mild; the destruction, or at least effective disinfection, of sputa; and, finally, what up to the present time has not received the attention it demands, the resort to the bacteriological examination of all cases of sore throat, however trivial they may appear, and the employment of bacterial cultivation during convalescence from diphtheria until the microbe can no longer be detected.

**Carter, J. M. G.: The Prevention of Infectious Diseases.** (*Journal of The American Medical Association.* 1896. Vol. xxvii., No. 8.)

The author closes a very excellent paper on this subject with the following suggestions:

1. Systematic cleanliness should be practiced (*a*) by thorough disinfection of the patient; the sick room, all instruments, vessels, and other apparatus or clothing in use; (*b*) by allowing no unclean or infected fabric or vessel to be taken from the room until rendered aseptic.

2. Prevent individual contact (*a*) by insolation, segregation, or quarantine; (*b*) by prohibiting communication between the infected and uninfected except under strict surveillance of the physician or in accordance with his explicit directions.

3. Provide thorough and systematic ventilation of cellars and basements as well as all other rooms in houses used for dwellings, and give free access of air under floors of houses which have no cellars or basements, and supply complete drainage.

4. Fortify the system against pathogenic bacteria (*a*) by abundant and suitable nourishment; (*b*) by insisting upon the observance of the laws of hygiene, relating to clothing, eating, exercise and bathing; (*c*) by the administration of certain drugs, among which belladonna, iron and pilocarpine are prominent;

(d) by the conservative use of vaccination, inoculation, the serums or antitoxins and perhaps protonuclein.

5. The state or city should see that the poor have work, food, clothing, good shelter, public baths and fresh air.

6. Health inspection officers should keep their wards in good sanitary condition, and see that the water and food supplies are uncontaminated.

## SURGERY.

**Marsden, R. W.: The Joint Diseases of Scarlet Fever.**  
(*Medical Chronicle*. 1896. Vol. v., No. 5.)

To obtain a clear idea of this interesting group of joint affections, it is necessary to begin by assuming that the existence of different types has been proved, for any attempt to include all inflammations of the joints occurring during the course of scarlatina under one title must inevitably lead to erroneous conclusions.

*Scarlatinal Synovitis*.—This term should only be used in connection with the form which occurs about the end of the first or beginning of the second week of an attack of scarlatina. The terms "rheumatic synovitis" or "scarlatinal rheumatism" are objectionable, since it must be evident to any one who has seen one or two cases merely that there are several points which are antagonistic to the view of its rheumatic origin.

A comparison of the tables presented by the author shows: (1) That scarlatinal synovitis is most frequent in patients from five to fifteen years of age. In conjunction with this, however, it must be noted that scarlatina is most prevalent during the same age period. (2) That attacks of scarlatinal synovitis are relatively most frequently met with in adults or persons over fifteen years of age. (3) That scarlatinal synovitis is comparatively rarely met with in patients under five years of age.

It is, in connection with the last mentioned fact, interesting to remember that it is precisely during this age period that severe angina, with sloughing and extensive ulceration, is most prevalent. This is of great importance in connection with the theory of the septic nature of this complication.

*Septic Arthritis*.—Until recent years no objection was taken to the inclusion of this form of joint affection as a variety of the form already considered. Trousseau, when writing on "scarlatinous rheumatism," says: "Sometimes also it takes the terrible and pitilessly fatal suppurative form." Fortunately, this complication is much rarer than the true synovitis.

This form of joint affection is essentially an arthritis; the synovial membrane, the periosteum, the bone, and the tissues surrounding the joint, all share in the inflammatory process. The joint cavity is usually filled with a purulent fluid, rich in micrococci, and similar cocci are found generally scattered, or locally collected, in the various tissues above mentioned.

*True Rheumatic Synovitis.*—This complication is even less common than the septic form, and it usually occurs at a still later period. The patient, after an attack of scarlatina, the severity of which is apparently of little moment, reaches an advanced stage of his convalescence possibly, without the super-vention of any complication whatever, when he complains of pains in one or more joints, and an examination reveals a moderate pyrexia, with pain on movement, tenderness, and frequently a little swelling in connection with the affected joint or joints.

**Meyer, Willy: Incision of Retro-Pharyngeal Abscess from the Neck.** (*American Medico-Surgical Bulletin.* 1896. Vol. ix., No. 9 )

The author believes that if we have to open a deep-seated abscess situated in the neighborhood of the large cavities or canals of our body, it is better surgery to do this from the outside than to penetrate the wall of the cavity from within. The latter procedure certainly is nearly in every instance more simple but it is less safe, and not in accord with antiseptic principles.

He calls attention to the incision of the retro-pharyngeal abscess from the side of the neck as being superior to the old method of a direct pharyngeal incision through the mouth.

He concludes with the following propositions:

1. In cases of impeded respiration, differential diagnosis of the affections in question should be made as early as possible by gentle digital explorations of the patient's fauces.
2. If retro-pharyngeal abscess is present it should be opened by an incision from outside and not through the mouth, except in weak babies under one year, who seem to be unable to stand general narcosis.
3. This is of especial importance in the tuberculous abscess, as digital exploration of the cavity can be made with leisure, and the proper antiseptic after treatment applied as practiced in similar troubles in other localities of the body. Although this operation is especially designed for low-seated retro-pharyngeal abscesses, it can be successfully employed for those situated high up and even behind the uvula.
4. If a swallowed sharp, foreign body has perforated the pharyngeal or œsophageal wall, this body may be extracted with the help of this incision before an abscess has been caused, or at least before it has spread too far.
5. The operation is not difficult and presents no special dangers. It should be performed with the patient in Rose's posture.
6. It has yet to be determined which incision deserves preference, whether that behind the sterno-cleido muscle or that in front of the same.



# AMERICAN PEDIATRIC SOCIETY.

## NINTH ANNUAL MEETING.

Washington, May 4th, 5th, and 6th, 1897.

### PRELIMINARY PROGRAMME.

1. The President's Annual Address. SAMUEL S. ADAMS, M.D.
2. A Case of Tic Convulsif. J. C. WILSON, M.D.
3. A Brief Analysis of One Hundred Cases of Frank Pneumonia. F. GORDON MORRILL, M.D.
4. A Case of Acetanilide Poisoning in a Newly-born Infant. IRVING M. SNOW, M.D.
5. Antitoxin and Intubation in the Treatment of Diphtheritic Croup. J. LEWIS SMITH, M.D.
6. Synopsis of Fifty-eight Cases of Empyema Operated Upon During 1896 in the Children's Service of Mount Sinai Hospital. B. SCHARLAU, M.D.
7. Adherent Pericardium in Children. WM. OSLER, M.D.
8. Lithæmia in Children. B. K. RACHFORD, M.D.
9. A Case of Diphtheria of the Eye. T. M. ROTCH, M.D.
10. An Unusual Case of Erythema Multiforme. FLOYD M. CRANDALL, M.D.
11. A Case of CEdema in Infancy. J. P. CROZER GRIFFITH, M.D.
12. Multiple Purulent Arthritis with Gonococcal Vaginitis. L. EMMETT HOLT, M.D.
13. Retained Intubation Tubes; Causes and Treatment. JOSEPH O'DWYER, M.D.
14. Hereditary Tendency in Pediatric Practice. FLOYD M. CRANDALL, M.D.
15. Retro-pharyngeal Abscess. J. P. CROZER GRIFFITH, M.D.
16. Abrasion of the Umbilical Wound. IRVING M. SNOW, M.D.
17. Murmurs and Heart Lesions in Infancy. WILLIAM P. NORTHRUP, M.D.
18. A Frequent Significance of Epistaxis in Children. J. HENRY FRUITNIGHT, M.D.
19. Report of the Committee on the Collective Investigation of Antitoxin Treatment of Pharyngeal Diphtheria in Private Practice.
20. A Case of Suppurative Nephritis. ROWLAND G. FREEMAN, M.D.
21. Varicella Gangrenosa, a Case. W. F. LOCKWOOD, M.D.

A session is to be devoted to the demonstration of apparatus and pathological specimens. It is requested that announcements of such subjects be forwarded as early as possible. In order to collect papers on kindred subjects into the same session, the titles of further papers are also requested at an early date.

SAMUEL S. ADAMS, M.D.,  
President.

WILLIAM P. NORTHRUP, M.D.,  
Chairman of Council,  
57 East 79th St., New York.



# ARCHIVES OF PEDIATRICS.

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## Original Communications.

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### PRECOCIOUS MATURITY.

BY JOHN LOVETT MORSE, A.M., M.D.,

Assistant in Clinical Medicine, Harvard Medical School; Physician to Out-Patients at the City Hospital and at the Infants' Hospital, Boston.

The genital hemorrhages which occur in little girls, excluding those due to inflammation and injury, may be divided into four classes:

- I. The genital hemorrhages of the new-born.
- II. Hemorrhages due to tumors of the genital organs.
- III. Precocious menstruation, *i.e.*, uterine hemorrhage occurring at regular intervals, usually monthly, for a longer or shorter time, but unaccompanied by other evidences of premature sexual maturity.
- IV. Precocious maturity, *i.e.*, the premature development of the whole organism concurrently with menstruation and ovulation.

The genital hemorrhage of the new-born, which occurs in the first few days of life and does not recur, must not be confounded with menstruation, with which it has nothing in common. It is the result of some local catarrhal condition or of pelvic congestion caused by the accidents of birth or by the alteration in the circulation which takes place at birth.

Gautier, from whom I quote largely, after a careful study of the literature of hemorrhage due to tumors of the genital organs, comes to the following conclusions: Tumors of the vulva and vagina are sometimes, according to their nature, the source of hemorrhages at irregular intervals. Tumors of the uterus are very rare, and always secondary. Dermoid cysts of the ovary retard or prevent the appearance of menstruation. Sarcomatous tumors of the ovary can, in some cases, give rise to uterine hemorrhage at irregular intervals, and also to coincident premature

development of the internal and external genital organs with hypertrophy of the mammary glands.

Gautier, in a fairly complete review of the literature of genital hemorrhage in little girls previous to 1884, finds twenty-four cases which he places under the head of precocious menstruation. He undoubtedly overlooked a certain number of Russian, English and American cases, however. I have found three cases which he missed and three which have been reported since then which seem to belong in this class. A summary of the collected cases shows that the incidence of the flow was as follows:

First Year,	-	-	5	First Week,	-	-	1
Second Year,	-		4	One Month,	-	-	1
Third Year,	-	-	5	Four Months,	-	-	1
Fourth Year,	-	-	4	Nine Months,	-		1
Fifth Year,	-	-	4	One Year,	-	-	1
Sixth Year,	-	-	4				
Seventh Year,	-	-	4				

The return of the flow was regular. The duration of the flow was constant for each subject, varying between one and five days. The duration of regular menstruation was as follows:

Three Months,	-	-	3	One Year,	-	-	2
Five Months,	-		3	Nineteen Months,	-		1
Six Months,	-	-	2	Two Years,	-	-	1
Eight Months,	-		1	Four Years,	-	-	1
Many Months,	-	-	2	Five-and-a-half Years,			1

In eleven the flow persisted as long as they were under observation. This was rarely more than a few months, however; and it is probable that it did not continue but a short time. In one case which began early, the flow soon ceased, but reappeared at one-and-a-half years, and then continued for three years. It then ceased again for four years, and continued as long as the case was under observation. In another case in which the flow began at seven years, it continued for four months, and was then replaced by hemoptysis for nine months. There was no recurrence of either. In nearly all of the cases given in detail there were menstrual molimina. None showed undue development of the external genitals. Three had larger breasts than normal. In one of these the development of the breasts, as well as of hair

on the pubes and vulva, was only temporary, both disappearing in less than a year. None showed sexual desire or unusual mental development. One masturbated. None came to autopsy. These cases certainly seem to justify the conclusions of Gautier that a flow with regular monthly return may occur for many months in a little girl; that this flow, of a duration of from one to five days, is usually preceded by various feelings of discomfort analogous to those which announce the periods in women; that this may be associated with a normal condition of the general health and persist for an indefinite period without being accompanied by a premature development of the body or genital organs.

Puberty manifests itself by an ensemble of symptoms which appear in a variable order. These are a rapid growth of the whole body in height and weight, changes in the size and shape of the genital organs and mammary glands, the appearance of hair in the axillæ and about the genitals, regular and normal menstruation and ovulation. Menstruation is rarely, if ever, the first of these symptoms. It normally appears at fourteen years and puberty is complete at eighteen. Precocious maturity is the condition in which this ensemble of symptoms develops prematurely. Gautier collected forty-one cases of this condition, and I have found five which he seems to have overlooked, and six which have been published since. I found references to two other American cases which I was unable to obtain, and was unable to read the reports of two cases in Russian, one of which contained references to earlier Russian cases. I also have a case of my own which is as follows:

Louisa J. was born August 29, 1895. She is said to have weighed fourteen pounds at birth. It was noted at that time that her breasts were large, and that there was a little hair on the pubes. Her mother, who was then twenty-one, began to menstruate at twelve. There is no history of early menstruation in either family. One other child, a boy, is normal in every way. At two months there was a considerable growth of hair on the pubes. On May 29, 1896, when exactly nine months old, a bloody vaginal discharge was noticed by the mother. There were no other symptoms, and the child appeared perfectly well. I saw her first on June 1st. She was very large and fat, weighing twenty-eight and a half pounds. The breasts were large, the mons veneris prominent, and the external geni-

tals well-developed. There was a slight bloody vaginal discharge, resembling in every way the normal menstrual flow. No evidences of inflammation or injury could be made out. Cover-slips, prepared at this time and stained with methylene blue and "triple stain," showed a little vaginal epithelium, normal red blood corpuscles, an occasional small mononuclear leucocyte, a very few polynuclear neutrophiles and a few bacteria. The flow ceased on June 2d. The accompanying photo-



CHILD FOURTEEN MONTHS OF AGE PRESENTING EVIDENCES OF PRECOCIOUS MATURITY.

graph was taken when she was a year old. At that time she walked strongly.

The flowing recurred as follows:

July 9th to July 12th, inclusive.

August 8th to August 12th, inclusive.

September 11th to September 14th, inclusive.

October 9th to October 12th, inclusive.

November 4th to November 7th, inclusive.

The amount increased progressively, the last menstruation being almost as profuse as in adults. It was never accompanied by molimina. She was examined carefully on November 9th,



when fourteen and a half months old. Her general appearance was that of a child of three. Her weight with clothes was thirty-six pounds. Her height was thirty-two and a half inches. She seemed to have more intelligence than the average child of her age, and said several words distinctly. No unusual modesty or evidence of sexual desire was noted. There were only two teeth. There was a moderate growth of hair in the axillæ and down the back. The breasts were prominent, and each contained a mass of gland tissue as large as a pigeon's egg. The nipples were well developed, and surrounded by a dark pink areola and a little hair. The mons and labia majora were large and covered with a profuse growth of hair. The labia minora were well differentiated and fairly large. The clitoris was distinct but not disproportionately large. The hymen was distinct and easily distensible. Dr. W. L. Burrage kindly made a vaginal examination for me. He introduced his little finger, one and one-quarter centimetres in diameter, four centimetres without causing any discomfort. The vagina was distensible, contained rugæ, and the cervix was distinctly felt. He thought that the vagina was as large and as easily distensible as it usually is in a girl of seven. There was no evidence of any tumor. The pelvis was not measured, but did not appear abnormally large.

This case is a typical one. It may be of interest, however, to cite one or two others.

Montagud's patient began to flow at seven months, and continued to flow regularly for nine months. She then skipped two periods, flowed again, and was then lost sight of. The duration of each period was two or three days. When seen at thirteen months, she presented the general appearance of a girl of three or four. Her breasts and nipples were large, and the areolæ marked. There was hair in the axillæ and on the pubes and vulva. The external genitals, especially the clitoris, were well developed. Her intelligence was above normal.

Wallentin's case was feeble at birth, but had breasts as large as small apples. She began to flow at fifteen months, and continued to flow regularly for three or four days, up to three and three-quarter years, when she was first seen. She was in the habit of playing with her genitals. Her appearance at that time was that of a much older child. The breasts were largely developed, and had large nipples and wide, brown areolæ. The mons and labia were well developed and hairy, but there was no hair in the

axillæ. She continued to menstruate regularly up to the age of six and a half years, when she was again seen. Her appearance then was that of a small but completely developed young woman. Her breasts were like those of an adult, and furnished with large, erectile nipples and wide, brown areolæ. The pelvis was large and corresponded to the adult type. The external genitals were completely developed. A vaginal examination was made under chloroform. The vagina was four centimetres long and contained marked rugæ. The uterus was the size of a small walnut, and corresponded in every way to the uterus of puberty. The left ovary could be felt the size of a bean. Her mental development was above normal, and her tastes those of a young woman. She was very modest, but very easily excited sexually, and had to be kept away from boys.

A study of these collected cases of precocious maturity shows that some signs of the condition were always manifest at birth. These were sometimes the considerable weight of the child, sometimes the protuberance of the breasts, sometimes the presence of hair on the vulva, and twice the menstrual flow. All increased rapidly and progressively in weight and height. Whenever the weight and height were observed, they were above the normal for the given age. In addition to menstruation, all showed some or all of the other evidences of puberty—large breasts, differentiated external genitals and hair about the genitals. These varied in the order of their appearance and in their relative development, and sometimes preceded and sometimes followed the first menstruation. Menstruation was never the first symptom, although it was often the first one noted and the one that called attention to the condition. Other symptoms, which must have been of earlier development, were then invariably noted. The ages at which the first menstruation appeared were as follows:

At Birth, -	- 2	15 Months, -	- 2	2-3 Years, -	- 3
4 Months, -	- 2	16 Months, -	- 1	3-4 Years, -	- 6
5 Months, -	- 2	17 Months, -	- 1	4-5 Years, -	- 4
7 Months, -	- 4	18 Months, -	- 1	5-6 Years, -	- 2
9 Months, -	- 6	19 Months, -	- 2		—
10 Months, -	- 1	21 Months, -	- 1		15
First Year, -	- 5	22 Months, -	- 1		
	—	23 Months, -	- 1		
	22	Second Year, -	- 4		

In one case the age was not stated, and in another death resulted from an hematocele at three and a half years, there having been retention of the menstrual flow as the result of atresia of the vagina. In no case was there a family history of early menstruation. Menstruation was usually preceded by molimina. It was, as a rule, regular. The duration of the flow varied from two to six days. Its quantity was about the same as that usually found in subjects arrived at the normal age of menstruation. All the cases that lived continued to flow regularly as long as they remained under observation. Only three were followed to adult life. One, who began to menstruate in her second year, became pregnant at eight years, ceased to flow at twenty-five, and lived to be seventy-five without recurrence. Another, who began to menstruate at nine months, was still flowing regularly at twenty-seven years. She had then been married a year, but had not become pregnant, possibly because of some disease of the ovaries, which were swollen and tender. Still another, who began to flow at thirty months, always menstruated regularly, except during her pregnancies, nine in number, and was still menstruating at fifty-three, when the observation was published.

There was but one satisfactory autopsy among the cases which died. Prochownick's case began to menstruate at a year, and flowed two or three days every four weeks up to the time of her death at three years. She died of acute bronchitis forty-eight hours after the cessation of the flow. The autopsy showed but little development of the breasts, which, however, contained gland tissue. There was hair in the axillæ and about the genitals. The external genitals were well developed. The uterus, both in its size and in the proportions between the body and cervix, had reached a far higher stage of development than is normal at that age. The mucous membrane plainly showed the conditions usually found after menstruation. The ovaries showed the changes due to regular ovulation. The lesions of rachitis and general tuberculosis were also found. This case seems sufficient to prove that the menstruation of early maturity is accompanied by ovulation.

The fact that three of these cases became pregnant early is corroborative evidence of early ovulation. One that began to menstruate in her second year became pregnant at eight years, was in labor six days, and was finally delivered at full term by embryotomy. Another, that began to menstruate in her first



year, was delivered at full term of a seven-pound child when ten years old. Still another began to menstruate at four years, became pregnant at eight and a quarter years, and aborted with a hydatiform mole at five months.

In many of these cases there was distinct evidence that sexual desire was present, often very early. This is not surprising, as it seems natural that sexual desire should develop coincidentally with sexual maturity.

The mental development in these cases was, as a rule, not as rapid as the physical and sexual. Some were stupid, some at about the same stage of mental development as most children of their own age, and others showed the mental characteristics and tastes of far older children, or even of adults.

The review of these cases proves conclusively that in a certain number of instances sexual maturity is reached very early, and that the process of development differs in no important particular from the normal except in its precocity. A comparison of these cases of precocious maturity with those of precocious menstruation previously described, justifies the division of these cases of early menstruation into two classes. This is well shown in the following comparative table:

PRECOCIOUS MENSTRUATION.

No known autopsy.

Hemorrhages beginning almost equally often between the ages of one and seven years.

Regular monthly return.

Normal development.

Cessation of monthly flow at the end of a variable number of months.

PRECOCIOUS MATURITY.

Premature development of internal genital organs. Evidences of ovulation.

Menstruation beginning most often in the first two years of life.

Regular monthly return.

Congenital, progressive and rapid development of whole body.

Complete sexual maturity at eight or ten years.

Continuation of menstruation.

The explanation of precocious maturity is simple—it is a physiological anomaly of development. That of precocious



menstruation, and of its relation to precocious maturity, is obscure, and cannot be solved, if it can be then, until cases come to autopsy.

Various causes have been adduced for precocious maturity—among them fecundity of the mothers, sexual excitement, and certain diseases, as rickets, hydrocephalus, and lipomatosis. The history of the cases does not show special fecundity in the mothers. Sexual excitement is an impossible cause, as the condition is partially developed at birth. While rickets, hydrocephalus and lipomatosis have, in certain rare instances, been associated with precocious maturity, there is no evidence to show any causal connection. The only conclusion that can be arrived at, therefore, is that absolutely nothing is known as to the etiology of precocious maturity.

The medical treatment of this condition is absolute abstinence from all therapeutic measures. The psychological treatment, however, is important. The sense of modesty is early developed, and should be respected. Their sexual precocity should, as far as possible, be hidden, especially from other children. It must be remembered that their sexual desire is well developed long before their mental powers of control, and that their unusual development especially exposes them to violation. That the danger of early pregnancy is a real one, is shown by the cases already reported. Hence they should be protected from accidents in every way.

#### CONCLUSIONS.

Precocious maturity is a physiological congenital anomaly of development. Menstruation is never the first symptom, but is always preceded and accompanied by others. Menstruation most often appears in the first two years. It is accompanied by ovulation. The attributes of maturity are not all acquired before the age of seven or eight years. Sexual desire is soon developed. Pregnancy may occur early. Menstruation may continue as long as when it begins at the normal time. The etiology of precocious maturity is unknown. The relation to precocious menstruation is obscure. There is no medical treatment. As the mental development of the unfortunates afflicted with this condition is usually far less than the sexual and physical, they must be carefully guarded against voluntary or involuntary intercourse.

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 317 MARLBOROUGH STREET.

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**Feeding Bottles.**—The *Academie de Médecine* in Paris does not think it beneath its dignity to express an opinion on babies' feeding bottles, because it concerns a matter of vast importance to the community, and it has emphatically condemned all feeding bottles with long and complicated tubes, because it is impossible to keep them clean and sterilized. Consequently they become the nidus for bacterial development, particularly at the joints. The simplest bottle, which can be scalded throughout, is the best, but there may be great difficulty in persuading poor women to adopt them, because, although a siphon bottle may be the means of poisoning her baby, yet she can put it beside the child in its cot and go about her other occupations, leaving it to absorb its nourishment automatically.—*New York Medical Journal.*

# ACUTE, NON-SPECIFIC, INFLAMMATORY CONDITIONS OF THE UPPER RESPIRATORY TRACT IN INFANTS.

BY CHARLES GILMORE KERLEY, M.D.,

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Thorough examination of the upper respiratory passages in infants is extremely unsatisfactory. We can make no examination of value of either the nose or the larynx. The infant's nostrils are very small, and upon pressing the walls as widely apart as possible, we may see the lower end of the inferior turbinated bone, and a small portion of the septum.

## ACUTE RHINITIS.

In acute rhinitis the inferior turbinated bone will be found enlarged, and perhaps resting upon the septum. The mucous membrane will show general intense congestion. The pathological changes are the same in all cases, only varying in the degree of intensity.

On account of the narrowness of the nasal passages in health, the slightest degree of swelling and congestion impinge upon the lumen, and the breathing is interfered with.

The attack usually follows exposure. Insufficient head covering is, according to my experience, a most frequent cause. The part played by micro-organisms is by no means an unimportant rôle. The changes resulting from the exposure furnish a favorable soil for germ growth. The streptococcus, the pneumococcus, the gonococcus, have repeatedly been found in the nasal secretion.

The first signs of the disease will usually be manifested while the child is nursing; he has to stop and breathe, he nurses with difficulty. Sleep is also interfered with. Soon the child begins to sneeze, and there is a muco-serous discharge from both nostrils. There is usually slight fever and restlessness. Acute rhinitis is serious in the sense of its interfering with nursing, and in the diseased condition of the parts that may follow in the neglected or badly treated cases. The post-nasal space, the naso-pharyngeal vault, is always involved secondarily to a certain extent. In infants this space is merely a narrow slit. A

moderate degree of inflammation and swelling renders drainage imperfect, a favorable culture field for bacteria is formed, and a sub-acute or chronic inflammation is set up. The result—adenoid vegetation in the vault, with all the attendant ill results.

If seen early during the stage of engorgement, or even after the parts are secreting freely, properly applied treatment will speedily produce excellent results. In these cases, as a rule, the physician is called too late—too late to be able to check the process in a few hours.

*Treatment.*—When called to see an infant with acute rhinitis early in the attack, whether in the stage of engorgement, or engorgement and secretion, I order at once a tablet treatment of one-eighth grain camphor with one-twentieth grain calomel. These are given thirty minutes apart. When ten have been given, camphor alone is administered, one-eighth to one-fourth grain every hour. In addition to this, two drops of a solution of menthol in liq. alboline, two grains to the ounce, is instilled in each nostril every thirty minutes for three hours, and one drop every two hours thereafter, until the acute symptoms subside. Usually the child will be able to sleep and nurse comfortably in three or four hours. If the case is an obstinate one, however, and the engorgement extreme, cold compresses applied over the bridge of the nose will materially hasten recovery.

The author has never seen signal success from the application of a weak solution of nitrate of silver to the anterior and posterior nares. The ability of the physician to make an effective application to this portion of the respiratory tract in infants is extremely doubtful.

The parts may best be reached through the nostrils in the use of an oily menstruum. Cocaine should never be used for this affection in the young. In menthol we have a most effective remedy for acute rhinitis. The distended blood-vessels contract under its use, furnishing the child a breathing space. Through the further action of its astringent properties the serous discharges cease.

#### ANGINA CATARRHALIS.

This disease may occur independently of the foregoing, but is frequently associated with it. It varies greatly in its intensity. In some cases there will be but a slight redness of the mucous membrane. In others the congestion will be of such a degree



of intensity that it would seem as though the blood might burst from the vessels. The picture which is presented upon looking into the throat is as follows: The soft palate, the pillars, the tonsils, and the posterior pharyngeal wall, present a deep red, granular appearance. On the posterior pharyngeal wall there will usually be seen particles of tenacious mucus. Could we look into the naso-pharyngeal vault, as we can in older children, we would find here also the general intense congestion. Bacteriological examination of the secretion in these cases reveals the streptococcus in over ninety per cent. The exact part which micro-organisms play is difficult to determine. It is probably an important rôle. Here, as in acute rhinitis, exposure renders the parts a favorable field for germ growth. In some cases there is an accompanying tonsillitis, but, as a rule, the tonsils share only in the general inflammatory process. In a very few patients there will be found a swelling of the glands at the angle of the jaw.

The onset is with fever, ranging from  $100^{\circ}$  to  $103^{\circ}$ , restlessness, pain upon swallowing, and cough. The child nurses poorly. If bottle-fed, he will take the food much more readily if given cool. The cough is by far the most distressing symptom. The cough is characteristic. It is hard, teasing, and unsatisfactory, each cough separate and distinct. The attacks of coughing are usually paroxysmal in character, and most troublesome at night. It is often impossible to differentiate between this cough and that of the early stage of pertussis. Catarrhal angina never destroys life, but is an important illness in early life on account of the disorders that follow in its train. Chief among these are ear diseases and chronic pharyngitis.

*Treatment.*—Sprays and local applications are alike impracticable in infants. Swabbing with antiseptic and astringent preparations might be of service if it could be properly carried out. Cold compresses in the infant produce fright, irritability, restlessness; all of which add to the patient's distress.

In young infants, then, those under one year of age, we are obliged to depend entirely upon internal medication in the management of the affection.

Two drugs I have found to be of the greatest service. Antipyrin acts upon the nervous system, controls the reflex excitability, and thus modifies the cough. Chlorate of potash is a most valuable remedy. Under its use I have seen the inflammation rap-

idly subside in many cases. In not a few I have seen the child relieved in twenty-four hours. This drug, as is well-known, is secreted unchanged by the salivary glands. The action is probably that of a disinfectant, and destroys, or renders harmless, the micro-organisms that are so much of a factor in these cases. I usually combine the two remedies, antipyrin and chlorate of potash, one grain of each every two hours for a child one year old. Aconite, supposed to possess great virtue in this disorder, has been a failure in my hands. When resident physician at the New York Infant Asylum, extensive observations were made in its use, and I have yet to be convinced that it is of the slightest therapeutic worth.

#### CATARRHAL LARYNGITIS.

Catarrhal laryngitis may occur independently of rhinitis and catarrhal angina, but it is frequently associated with them. We are told that the child had the snuffles for a day or two; this was followed by a slight fever and cough; the cough at first was hard and paroxysmal; that the child evidenced discomfort upon swallowing. Then the scene changed; the cough became hoarse and croupy, particularly so toward evening, and lost some of its paroxysmal character. The temperature arose perhaps as high as  $104^{\circ}$  F. In a small proportion of the cases the larynx is primarily involved, and the first signs of illness are the croupy cough and the fever. The vocal cords and the parts above are congested and swollen. In the majority, fever,  $101^{\circ}$  to  $104^{\circ}$ , hoarse, croupy cough, restlessness, and loss of appetite, comprise the symptoms.

Under proper treatment, the child is well in from three to five days. In a few, however, the onset is most abrupt, the first sign of illness being a sharp, rasping cough, which comes on suddenly in the night. They are the cases of rapid development which furnish us our cases of spasmodic laryngitis or spasmodic croup. In these patients we have not only the mucous membrane involved, but we have in addition an infiltration of cells into the sub-mucous tissue; the swelling and infiltration being sufficient, with the laryngeal spasm, and perhaps adductor paralysis, to produce fatal dyspnoea.

There seems to be a predisposition to croup in some families. It is rare for a child to have one attack. The attacks are usually repeated year after year. I have patients who have two or three

attacks yearly. Exposure is a most important factor. This is well illustrated by a case that occurred in the Infant Asylum in 1890, and was reported in the *Medical Record* at that time "as the youngest child upon whom intubation had been followed by recovery." The patient in question, a previously healthy female infant, ten weeks old, was carried from one cottage to another, a distance of forty feet, on a cold, windy day in December, with no other head covering than that of a shawl thrown loosely over its head. In two hours the child commenced to cough; there was some dyspnœa, and the cough was slightly hoarse. In four hours the stridor and dyspnœa had increased, in spite of active treatment, to such an alarming degree that intubation was necessary. The differential diagnosis between the so-called idiopathic croup, with which we are dealing, and membranous croup, or laryngeal diphtheria, is usually impossible during the first twenty-four hours, in the absence of visible membrane, all statements to the contrary notwithstanding. Those writers who give elaborate details of differentiation at the onset of these diseases have undoubtedly seen very few of either, and no autopsies.

I have seen cases which appeared to be plain croup, and were diagnosticated as such by several physicians. These patients were intubated, and at the autopsy, membrane was found extending into the most minute division of the bronchi. Bacteriological examination of the membrane revealed the Klebs-Loeffler bacillus. I recollect two cases with membrane on the tonsils and pillars which developed urgent dyspnœa, and were intubated. At the autopsy, no membrane was found below the cords.

Such cases are rare, but similar ones have been reported. They teach us that even with visible membrane we are not absolutely sure of a membranous laryngitis. The differential points of value which may appear during an attack are as follows:

- I. Presence of Klebs-Loeffler bacillus, or visible membrane, points strongly to membranous laryngitis.
- II. In catarrhal laryngitis with spasm, dyspnœa is largely inspiratory. In the membranous form, it is apt to be inspiratory and expiratory.
- III. Prostration greater in the membranous form, particularly after twenty-four hours.
- IV. When there is little or no response to treatment properly



carried out, we most always have a membranous laryngitis to deal with.

Swelling of the glands may be of assistance later on in the disease, after three or four days, but by this time the diagnosis will have been made. The point frequently made, that sudden onset indicates the catarrhal form, is without value. The duration of the active stage of the severe form has varied in my experience from three hours to three days.

*Treatment.*—The local external treatment is unsatisfactory in infants. In children of understanding, the application of cold compresses or the ice bag is an excellent procedure. In the cases without dyspnœa, in which we have fever, and the harsh, teasing cough, a steam spray is unquestionably of service, and it matters but little whether plain water or some medicated solution is used. I believe the steam atomizer to be far superior to any other apparatus. The warm spray furnishes the relief. Ipecac, creosote, tar, and lime water, have all been used in varying strengths, and all did just as well as plain water, and no better. The child, with the exception of the face, should be entirely covered, and thus protected from the vapor. The spraying may be continuous, or the spraying may be continued for fifteen minutes, with the same length of time rest; or the patient may be sprayed fifteen minutes every hour or two, depending upon the severity of the case and the relief afforded. The relief is so marked in some cases that the child readily recognizes its source, and opens the mouth to take in the vapor. The observations, however, were made in cases in whom the laryngitis was accompanied by an acute bronchitis, or acute bronchopneumonia. The nozzle of the atomizer should be held from four to eight inches of the child's face.

For internal use we have three drugs which are of value—ipecac, tartar emetic, and antipyrin. To an infant three months of age, I give tartar emetic one one-hundredth grain, ipecac one-thirtieth grain, and antipyrin one-fourth grain, at hour intervals. For a child eight months to one year, a favorite prescription with me is the following: Syrup of ipecac, one minim; antipyrin, one-half grain; bromide of soda, one grain; to be given at hour intervals in water. If the character of the cough does not change for the better, and the paroxysms become less frequent in from twelve to sixteen hours, the amount of antipyrin and ipecac is to be doubled. I have used antipyrin in spasmodic affections



of the larynx for years, and have never seen the much talked of depressing effects. The drug is certainly dangerous in incompetent hands; so is every other drug. The so-called expectorant syrups are worthless as expectorants, and harmful in that their continual administration deranges the stomach. The management of the severe form is different. These cases may have been mild at the start, but resisted all attempts at treatment. More frequently, however, the onset is sudden. They represent the type to which we are called in the night. The anxious parent meets you at the head of the stairs. You hear the brassy cough and the stridulous breathing before entering the room. The child is pale, nostrils active. There is an anxious expression on the face of the youngest patient. Older children are decidedly alarmed. There will be dyspnoea, and recession of the supra and infra sternal spaces. In such patients we must produce emesis at once. Ipecac is to be preferred, one teaspoonful of the syrup or wine producing vomiting in less than twenty minutes. Should the vomiting not occur in this time, repeat the ipecac.

It is useless now to trifle with atomizers and croup kettles, when we have a remedy of far greater value in calomel fumigators, first used by Corbin, of Brooklyn, in membranous laryngitis. The indication for bringing fumigators into use is dyspnoea in any degree. The process of fumigation is a simple one. The calomel must be sublimated in an enclosed space. Covering the crib with a sheet, and draping it over the sides, answers the purpose better than any other. Various means may be improvised at the moment to burn the calomel. The ordinary milk-warmer, composed of an alcohol lamp and folding rack, has answered the purpose admirably on several occasions. The top of a baking powder can was placed over the flame, and into this the calomel. If no other means are at hand, the ordinary kerosene lamp can be made to answer. The calomel is placed in a small tin pan, such as may be found in any kitchen, and held about one inch above the chimney. The best means, by far, is the Ermold lamp, so constructed that there is no danger of igniting the bed-clothing. When the sublimation is completed, do not at once remove the child, but allow him to rest in the vapor ten or twenty minutes. The calomel should sublimate slowly, ten grains requiring ten minutes. If this is done too rapidly, the air becomes suddenly charged with the fumes, and may produce irritation and cough. If the cough is very severe,

it may be well to allow a portion of the vapor to escape. The fumigation may be repeated at two hours intervals.

It has never been necessary for me to repeat the fumigations more than four times in a case of catarrhal laryngitis accompanied by laryngeal spasm. In fact, since using calomel fumigation, I have never been obliged to intubate a child with this disease.

The efficacy of the calomel is probably through its action as an irritant to the diseased parts, thus producing a free, watery secretion, a weeping of the tissues, thus depleting the blood-vessels, and consequently offering a larger breathing space. By this means, also, the pressure on the nerve and organs of the part is removed, and the laryngeal spasm is diminished.

Desiring to learn the effect of the calomel fumigation, the writer subjected himself to a treatment with a little patient. The sensation at first was unpleasant, and a moderate degree of coughing followed. Upon emerging from the tent, there commenced a most copious, watery secretion from the larynx and trachea, which continued for half an hour.

When the danger point of dyspnoea is passed, treatment must be continued in other lines. There will probably be fever and cough. The patient must be kept in bed, one grain of calomel given in ten doses, and the management suggested for the non-spasmodic cases instituted.

It is my custom, during the course of the affections referred to, to cut the food down one-half in strength—if bottle-fed, keeping up the quantity by the addition of water; if nursed, make the nursing intervals an hour longer, or reduce the time allowed for the nursing one-third. By so doing, gastro-intestinal complications will often be obviated.

113 WEST EIGHTY-THIRD STREET.

# REPORT OF A CASE OF SPORADIC CRETINISM OR INFANTILE MYXŒDEMA.

BY JAMES B. HERRICK, M.D.,

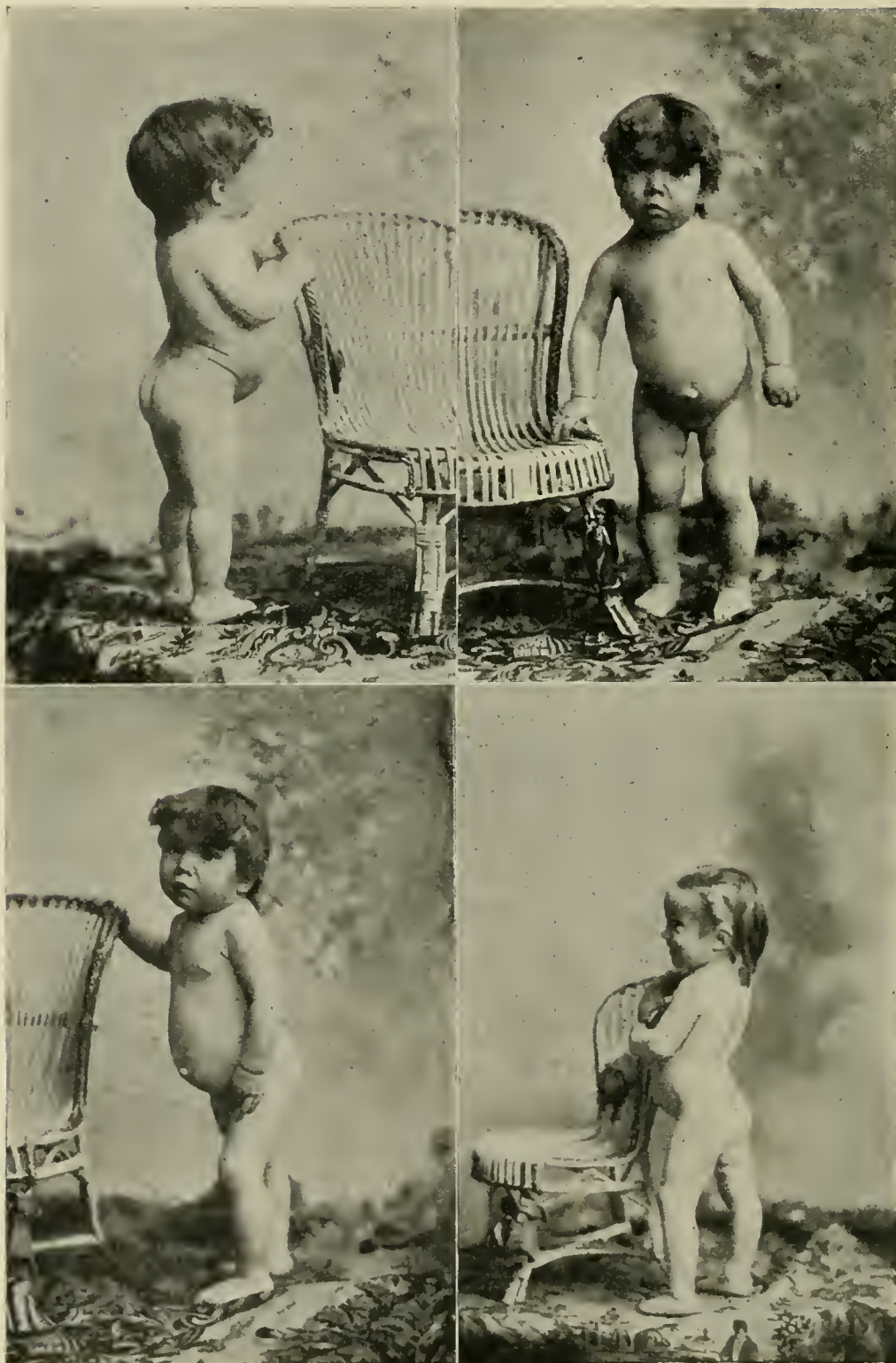
Chicago.

It is not necessary, even in the way of introduction, to refer to the series of observations and experiments that led to the recognition of the close relationship existing between cretinism, operative myxœdema, and the idiopathic form, all shown to be dependent upon an anatomical or physiological absence of the thyroid gland—athyroidea, and all admitting of relief by the administration of thyroid extract. The work has been done within such a comparatively recent date, and the story told so many times, that it would be idle to repeat it here, and to rehearse the labors of Gull, Ord, Reverdin, Kocher, Schiff, Horsley, Bircher, Lannelongue, Horwitz, Mackenzie, Fox, Baumann, Murray, Ewald, and others. The combined work of these observers, who, it will be noted, are of many lands, and who are well-known as clinicians, surgeons, experimental physiologists, and therapists, makes a story as fascinatingly interesting as a romance, yet with conclusions as unimpeachable as any cold and prosaic scientific fact.

The following case differs in no essential point from the many cases of cretinism previously reported, particularly in British journals. Following Horsley's classification, it belongs to the class of cases developing in early infancy. It remained unrecognized until the age of four years and eight months, and shows marked improvement in both physical and mental condition, as the result of one year's treatment with the thyroid extract.

*Anamnesis*, January 7, 1896.—E. M., a female child, the first offspring of not-related and healthy parents, was born in April, 1891, by an easy labor. Pregnancy had been uneventful, though at six months the mother had been greatly disturbed by the death of a younger sister from diphtheria. The family history showed that an aunt of the mother had died of "epilepsy." On the father's side an uncle had died at eleven years of "fits." Otherwise the family record was negative.





EDNA M., AGED FOUR YEARS, EIGHT MONTHS.

FIGS. I., II., III. AFTER TEN DAYS' TREATMENT WITH THYROID EXTRACT.

FIG. IV. AFTER FOUR MONTHS' TREATMENT.



The child was apparently healthy at birth, and weighed seven pounds. She cut her lower central incisors at seven months. The upper central incisors came in later and were "arched" *i.e.*, the free edges were concave. The other teeth were slow in appearing and were never well developed. Aside



EDNA M., AFTER ELEVEN MONTH'S TREATMENT WITH THYROID EXTRACT.

from an attack of bronchitis at six months she had been free from any illness. When three months old she was measured and found to be twenty-seven inches in height. Two years later she had gained three inches, and since then (two and one-half years) she had not gained.

She did not stand alone until two years of age. She learned

to speak her first word, "mama," at three years. At the time of the examination the mother could count only sixteen words in the child's vocabulary. Since birth there had been a persistent umbilical hernia, that failed to be relieved by the wearing of an umbilical pad. She had a poor appetite, was terribly constipated, the fæces being "like stones," often covered with blood-streaks, and only evacuated by the aid of an enema and then with great straining and crying. The urine was dark-colored, of strong odor; none was passed during the night. She seemed to suffer no pain, slept well, was happy in disposition, affectionate, seemed to understand when spoken to, but was slow and sluggish in comprehension and in action. She was as contented to sit in one place on the floor for two hours and play with a rag, as with a doll or with another child. The skin was always cold, and even in the hot weather of summer the mother had kept thick flannels on the child. She walked in a peculiar, almost waddling manner, with the abdomen stuck prominently forward. She was very unsteady on her legs; "she toppled over if the mother's dress brushed against her."

This history I obtained when the patient was brought to me on January 7, 1896. She had previously been under the care of several physicians, and treated for various ailments. I myself had several times, when the child was about a year and a half old, adjusted the umbilical pad, but had failed to notice the cretinoid condition. When, however, after an interval of three years she returned to me, it was plain that the child was a cretin.

*Status Præsens*, January 7, 1896.—The child looks undersized, short and squatty. She is pale and sallow. The face is broad, with a stupid look. The tongue is half protruded, the lips are thick. The head is large. The neck is short, thick, and with the fatty supra-clavicular masses plainly present. The skin is dry, harsh, scurfy; the hair dry, coarse and thin. The scalp is covered with a thick dandruffy crust. The teeth are miserably developed, crumbly, and as though worm-eaten. As she stands stripped, there is seen marked lordosis, and the prominent abdomen shows the bulging navel. The arms and legs look plump, the folds and wrinkles being exaggerated. The calves and the prominent abdomen remind one of pseudo-hypertrophic paralysis. This is further suggested by the gait and, as she rises from the floor, by her supporting herself on her hands and pushing herself up. She has, in fact, been treated by a physician for

this supposed ailment, She does not, however, climb up her own legs as do these patients.

The lungs, heart, and abdominal organs give negative results on examination. The rectal temperature is 98°; the pulse 80. She is decidedly dull and sluggish intellectually, and the voice is coarse and rough. I could not understand any of the words she used, though the mother understood a few. The thyroid could not be seen or felt.

I give a few of the measurements taken:

Height in stockings,	-	-	-	76.2 ctm. (30 inches).
Distances between eyes (inner canthi)				3.5 "
Circumference of head,	-	-	-	51 "
Circumference of neck,	-	-	-	24 "
Circumference of thigh,	-	-	-	23 "
Circumference of leg (calf)	-	-	-	19.5 "
Circumference of chest (nipple line)				48 "
Circumference of abdomen (navel line)				51 "
Weight,	-	-	-	27 $\frac{3}{4}$ pounds.

The mother expressed better than do these figures the large size of the head, when she said the child took the dress pattern of a child of one year but the hat of a child of seven.

I abbreviate the further history and the many records made during twelve months. I placed the child on thyroid extract given in the form of Parke, Davis & Co.'s tablets of "thyreoidin," later "thyreoids," each tablet representing five grains of sheep's gland. One to two tablets were given daily. Improvement was prompt. There was at first the evidence of thyroid reaction in an increase of temperature, rapid heart's action, profuse sweating, itching skin, restlessness, diarrhœa. There was a loss of two pounds in weight, and a rapid increase in height. The neck lost its chunky look, the folds of the skin were less marked. The skin became soft and moist, the hair less coarse and rough. The abdomen decreased in size so that the bands of the skirts had to be shortened. The neck grew so thin that "the old neckband was too large, and made it look as though she had on a low-necked dress."

But, best of all, the child has grown bright. She has added to her vocabulary many new words; the voice, while yet rather harsh, is much better modulated, and her words are much more plainly enunciated. She is no longer contented to play with a



bit of paper or a rag, but wants a doll and usually that of her brother, and she howls like any other child if she can't have it. And she has learned to strike back. She has grown mischievous; has to be watched constantly or she runs out of doors, down the steps, and over to the neighbor's yard to play with the boys. She is perfectly steady on her feet. She fretted during the summer because too warm; the mother for the first time put thin underwear upon her, as heretofore, even in the warm weather, the skin felt cold. The appetite is good, the bowels regular. In fact, one of the best guides in this case as to when enough thyroid extract was being given was the condition of the bowels. Too much extract invariably produced a diarrhœa. The mother states that if there were no other effect of the medicine than the change in the condition of the bowels it would be a cause for deepest gratitude.

In short, it is the transformation of a dull, stupid imbecile, into a bright, wide-awake child; the change of a stunted, pigmy-like unfortunate—a toad-like caricature of humanity, Osler calls it—into a growing, healthy, developing human being. Thyroid extract should rank as a specific with quinine in malaria, potassium iodide in syphilis, iron in chlorosis, diphtheria antitoxin in diphtheria.

The photographs but imperfectly show the change. The altered condition of the skin and the hair, the gait, the activity, the mischievousness, cannot be seen in the picture. Unfortunately, the first negative was spoiled by the photographer. The first photograph represents the child as she appeared ten days after beginning the treatment. She had already lost some in weight, and the photograph does not really represent her at her worst. Figures as to the changes wrought in a year are not more expressive than the comments of the mother. She says she has had to lengthen out the dresses but take in the neck and waist bands. By actual measurement there has been a gain of  $5\frac{1}{2}$  inches in height in the year. Lately the abdominal and neck measurements have more nearly approached those of a year ago, probably because of the increase that should go with an increase of nearly six inches in height, possibly because a smaller dose of the thyroid extract has been given of late.

The nature of cretinism, its symptomatology and diagnosis, have been so fully discussed in the last few years that I refrain from referring to them.



The ease with which this case passed through the hands of several physicians, myself among the number, without a recognition of its nature, led me to suspect that the disease might be more frequent in America than Osler's report in 1893 would lead one to think. On reading an article on this topic before the Alumni Association of Rush College with exhibition of pictures, four physicians said they were sure just such cases had escaped their recognition. Several cases a year have been reported in America since 1893, bringing the total from eleven up to about thirty. This, considering the fact that so much attention has lately been directed to this subject is a small number, and tends to bear out the result of Osler's investigation, yet many cases that have been observed are probably not reported. The ease with which it can pass for feeble-mindedness or idiocy, pseudo-hypertrophic paralysis, nephritis, or rickets, should lead every physician to keep a sharp lookout for these little unfortunates, for whom so much can be done in the way of perfecting physical and mental development.

751 WARREN AVENUE.

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**Health Conditions in School Life.**—I have long felt that the teaching and the medical professions ought to be more closely allied than they have been, in the great work of making the most of the rising generation. While it is the province of the teacher to equip the young mind with such knowledge as will be required in the coming life, and to impart such training and culture as will best fit the individual for the social sphere to which he may be called, it lies rather with the medical man to maintain health and vigor, and so promote full growth and development of the organism which is the recipient of that teaching and culture. The real and ultimate success of the teacher must depend, not only upon his own abilities, but also and in greater degree upon the organic condition of the material with which he has to work. One may as well expect to win the Derby with a weakly, ill-shaped horse, as to win a prize in the great race of life with a body and brain in a like condition. No amount of cramming and training will get a strong mind out of a weak brain, and this brain physique must depend upon the health and vigor of the entire organism during the period of development.—*Strachan, in Edinburgh Medical Journal.*

## Clinical Memoranda.

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### A CASE OF LONG-PERSISTING SENSORY HALLUCINATIONS IN A CHILD.

BY JOHN THOMSON, M.D.,

Edinburgh.

Janet B., aged nine years and ten months, was brought to the Sick Children's Hospital Dispensary on May 8, 1890, by her grandmother, who said that she was complaining of worms biting her under her skin, and was always wanting to wet her hands.

She was the illegitimate child of a somewhat hypochondriacal mother and a healthy but very passionate father. There was no history, however, of insanity on either side to be obtained.

On examination she was found to be a well-developed, bright, cheerful-looking girl, with nothing abnormal to be discovered about her except a somewhat furred tongue and a slight degree of hypermetropia in both her eyes. The thoracic and abdominal organs seemed healthy, and the bowels were regular and normal in action.

*Previous History.*—She had been a fairly healthy child, and with the exception of an attack of jaundice at four, of scarlet fever at six, and of measles at seven years old, had had no serious ailment.

*History of Hallucinations.*—About six years before I saw her she had an attack of jaundice which lasted two or three weeks. When she was recovering from this, she began to fancy that everything she touched with her hands or feet was covered with sand. To this she attributed a feeling which she had that her palms and soles were uncomfortably dry, so that she had a constant desire to wet them. She would accordingly, if allowed, go to the tap dozens of times every day and run water on her hands. When forbidden to do this, she would spit on her hands and rub the soles of her feet with them. She also occasionally complained of a similar dryness in her nose, and would wet her fingers and put them into her nostrils. These habits

she still practised with varying frequency when I saw her. She often complained of her palms being dry, when to the touch of others they were evidently moist.

Three years before I saw her (when about seven years old), she suddenly began to complain that worms were crawling "inside her skin," over her belly and back, and up over her chest to her neck. She said she felt them turning in her stomach, and that they always ate the food she took; also, that if they did not get enough food, she felt them eating her flesh. During the past three years she had never long been free of these sensations of "worms," although she did not sometimes speak of them for weeks at a time. When I spoke to her on the subject she was not at all shy about her delusions. She talked freely about the "worms" and how they troubled her, and evidently believed in their presence thoroughly. At the times when she complained most, she had often also a vertical headache, and sometimes vomiting and loss of appetite.

Her mother and grandmother had never noticed any other mental peculiarity. Her school-teacher, whom I saw subsequently, said that she did her lessons well, and was very intelligent. She was thought to be very opinionative, and somewhat quarrelsome with the other children, but nothing had ever been noticed in her behavior which suggested that she was in any way mentally peculiar.

*Treatment.*—She was ordered a mixture containing strychnine and gentian, which improved her appetite considerably. She said that the worms stopped moving at once after she took the medicine. She also ceased wetting her palms for some weeks. Within four or five weeks, however, she began again to complain of the worms.

*Further Progress.*—In October, 1890, she had whooping-cough; and, after it, began wetting her hands and nostrils constantly (a "hundred times a day").

During 1891 she seldom spoke of the worms, and only occasionally wet her hands.

In 1892, although she still continued the practise of wetting her palms occasionally, she no longer professed to feel sand on the objects she touched. Her general health was good, she had no other delusions, she did her lessons well, but was extremely passionate.

In October, 1892, menstruation began. Shortly before this



occurred, she had complained of worms moving under the skin of her back, and had a turn also of wetting her hands.

In 1893 her menstruation became regularly established, and she grew and developed considerably. She never complained of worms again, and by May of that year had quite given up wetting her hands, although she often breathed on the palms as if to moisten them. Since then she has had no return of her abnormal feelings, and keeps in fairly good health. She has, however, occasional attacks of dyspepsia, with lively subjective sensations, and is rather hysterical in demeanor. She is now working steadily as a dressmaker, and doing well in every respect.

*Remarks.*—The foregoing case seems worthy to be placed on record, because, in childhood, persistent hallucinations are so exceedingly rare. A craving to wet the palms and soles constantly, occurs now and then in children; but generally the imagined dryness of these parts is not attributed to so definite a cause as sand. There was in this child no local abnormality discoverable which could be regarded as to blame for the form of her hallucinations. They seemed simply the result of a psychosis—indications, so to speak, of a defective sanity confined to that portion of the mind which receives and appreciates the significance of ordinary sensations.

14 COATES CRESCENT.

## A CASE OF AMAUROTIC FAMILY IDIOCY.\*

BY HENRY HEIMAN, M.D.,

New York.

The case I present to you is one of unusual interest on account of the infrequency of its occurrence, and because of our ability to recognize the condition at the present time, by its characteristic features and the pathognomonic symptoms which the patient presents. I believe that formerly all these cases were simply classified in the category of "arrested development," "imbecility," or "idiocy." Ever since 1887 our attention has been called to special eye symptoms, of cases in children who are born apparently healthy and remain so up to the sixth month, then gradually become idiotic. This condition is accompanied with loss of sight, and it terminates fatally about the second

\* Read before the Harlem Medical Association, January 6, 1897.



year. Further observation has led to classify this symptomatic complex, under the name of "amaurotic family idiocy."

I will briefly give the history. Female child, age 14 months, mother's delivery normal, her first born. Family history negative, except that the mother was known to be nervous as a girl. First lower teeth at ten months; the patient cannot walk or talk. The parents believe that the child was healthy up to the sixth month, save for slight attacks of constipation. The child is both breast and bottle fed. The most prominent lesion in this condition is discovered by the employment of the ophthalmoscope. As early as 1885 attention was called to the eye lesion occurring in these cases. Dr. A. Strouse kindly examined the patient for me, and the following is his report. A yellowish-white patch is found occupying the situation of the macula, about two and one-half times the diameter of the disc of the optic nerve, in the centre of which is a cherry red round spot. The optic nerve, in this case, was found to be in a state of beginning atrophy.

Another important point in the history of this case is the fact that the child enjoyed perfect health and presented nothing abnormal up to the sixth month, and then became, without warning, idiotic and began to lose its sight. Other symptoms in this child are an open anterior fontanelle, slight paresis all over the body, reflexes increased, ankle clonus easily elicited. There are generally several members of the same family attacked. The prognosis in these cases is, as a rule, fatal about the second year. Dr. Sachs, in an article published in the *New York Medical Journal* of May 30, 1896, page 697, entitled, "A Family Form of Idiocy, Generally Fatal, and Associated With Early Blindness" (amaurotic family idiocy), gives a review of all cases known in literature up to date—nineteen all told. Dr. Sachs also saw this patient, and confirmed my diagnosis. Only this week I confined the mother of this patient with her second child, a boy. It will be interesting to watch the growth of this new-born child to ascertain whether he will develop a similar taint.

220 EAST ONE HUNDRED AND SIXTEENTH STREET.

# THE EDINBURGH ROYAL HOSPITAL FOR SICK CHILDREN.\*

BY JAMES CARMICHAEL, M.D., F.R.C.P.,

Edinburgh.

The opening of the new Royal Hospital for Sick Children is an important event in the medical history of Edinburgh. In conjunction with its noble and widely renowned Royal Infirmary, the city can now boast of having a children's hospital in every way worthy of being associated with it in giving relief to the sick poor of Edinburgh and the country districts, from which so large a number of the patients are derived. As Lord Provost Macdonald so truly said at the opening ceremony, "The hospital was not only for children coming from Edinburgh, but was open to those from every part of the country. They had only to show a good case, and they were taken in."

On the 31st of October, 1895, the opening ceremony was performed, under the most auspicious circumstances, by Her Royal Highness Princess Henry of Battenberg, who was accompanied by Prince Henry, whose sad and untimely death has since been so deeply deplored.

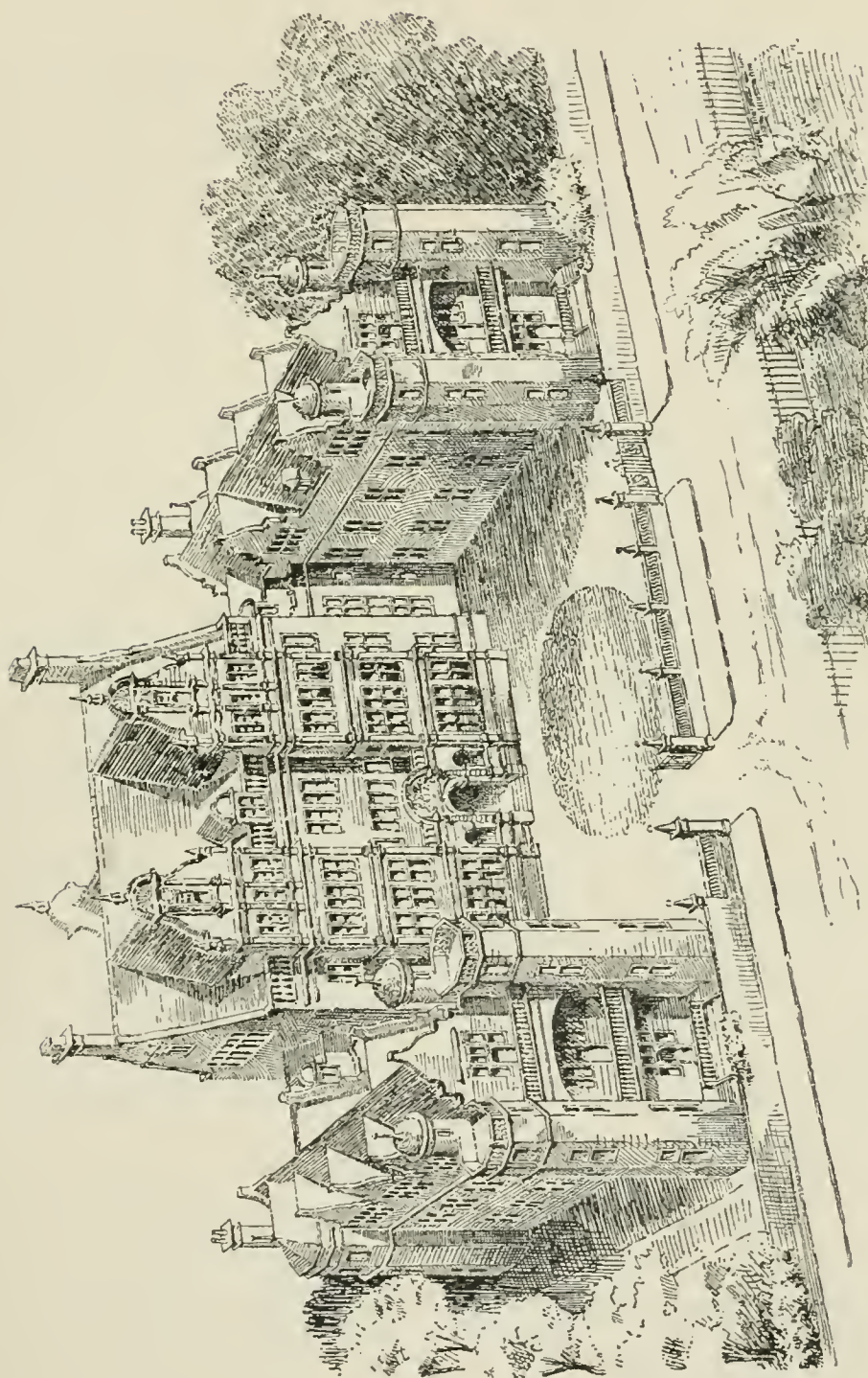
The medical staff being desirous that a description of the plans and arrangements of the new hospital should be recorded for the benefit of the profession, as well as the public, decided that no more fitting place could be found for this purpose than the pages of the *Edinburgh Hospital Reports*.

As often happens in great undertakings, the hospital had a very humble and small beginning. Thirty-six years ago—as was told by Dr. Balfour in his interesting article on "How the Royal Hospital for Sick Children was Founded," in the first volume of the *Reports*—a few philanthropic gentlemen, being of opinion that a children's hospital was a felt want in such a large city as Edinburgh, acquired old Meadowside House, at the foot of Lauriston Lane, for this purpose. It was soon found that the undertaking was fully justified, by the large number of poor children who were brought to the hospital for advice and treatment in the wards. It is pleasing to know that several of the original projectors of the hospital are still with us, and it must be a source of pleasure to them to see, in the completion of the new building, the full ripening of the fruit, the seed of which they had sown so many years ago.

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\* Abstract of an article printed in Volume Fourth of the *Edinburgh Hospital Reports*.





THE ROYAL EDINBURGH HOSPITAL FOR SICK CHILDREN, OPENED BY H.R.H., PRINCESS HENRY OF BATTENBERG,  
ON 31ST OCTOBER, 1895.

The site of the hospital is a most desirable one, on a comparatively level piece of ground about two acres in extent, formerly the site of the old Trades' Maiden Hospital.

#### GENERAL PLAN OF BUILDING.

Facing the south and close to the Meadows, one of the most important open spaces in this part of the city, the situation is free and airy; and the prospect looking south, over the Grange suburb and on to the Blackford, Braid, and Pentland Hills, is most pleasing. The south frontage of 384 feet faces Sciennes Road, and the west frontage of 264 feet is towards Sylvan Place. There is a back entrance to the north into Rillbank Terrace, close to the Meadow Drive. The block plan of the main hospital building is in the form of the letter E, the administrative portion being in the centre, and the wards in the two arms, shut off from the centre by disconnecting cross-ventilated corridors. It is set with its open side towards the south; the administrative block running east and west, the ward pavilions north and south. This allows the sunshine to penetrate every part of the quadrangle, the south side of which is open, allowing the greatest possible amount of light free access to the wards. The administrative block is five stories in height, the two upper stories being in the roof. The ward pavilions are three stories in height, the upper one being partly formed in the roof. The principal wards, four in number, are on the ground and first floors; those upon the second floor being the spare ward and the isolation and observation wards. The kitchen, with its larders, milk-house, and stores, is placed on the third floor; and the dormitories and accommodation for servants is on the fourth or attic floor. The accommodation for nurses is partly in the administrative block, and also in an annex or side wing at the northwest corner of the main building.

#### MEDICAL DEPARTMENT.

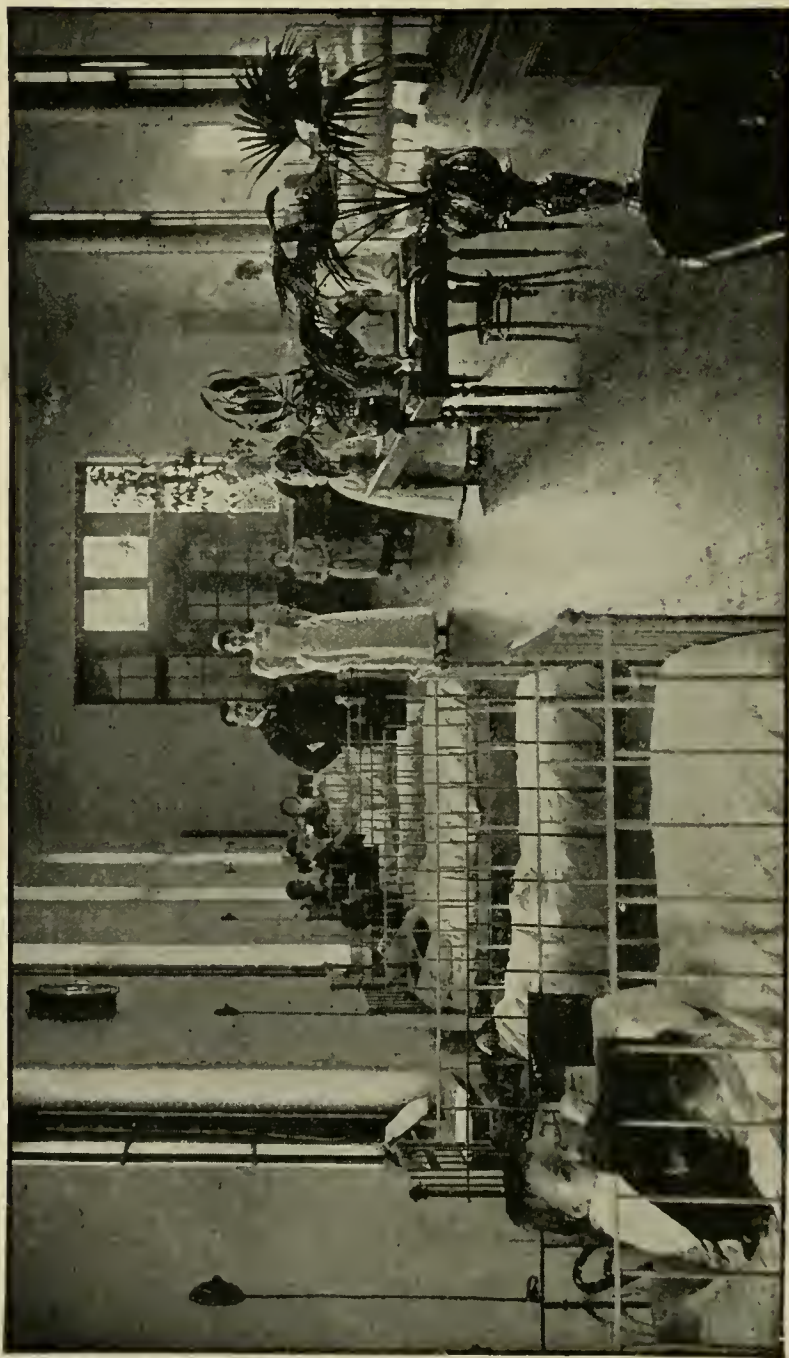
This consists of three wards, containing twenty-four beds each, one on the ground floor and two at either end of the first flat. Each ward is a counterpart of the other, and one description will suffice for all. Each is 84 feet 6 inches long, 23 feet wide, and 15 feet high. There are five windows on each side, all opening top and bottom, thus securing a thorough cross natural ventilation. The cots, twenty-four in number, are situated between the windows; 81 superficial feet of floor is allowed for each, and 1,215 cubic feet of air to each child. The floor of



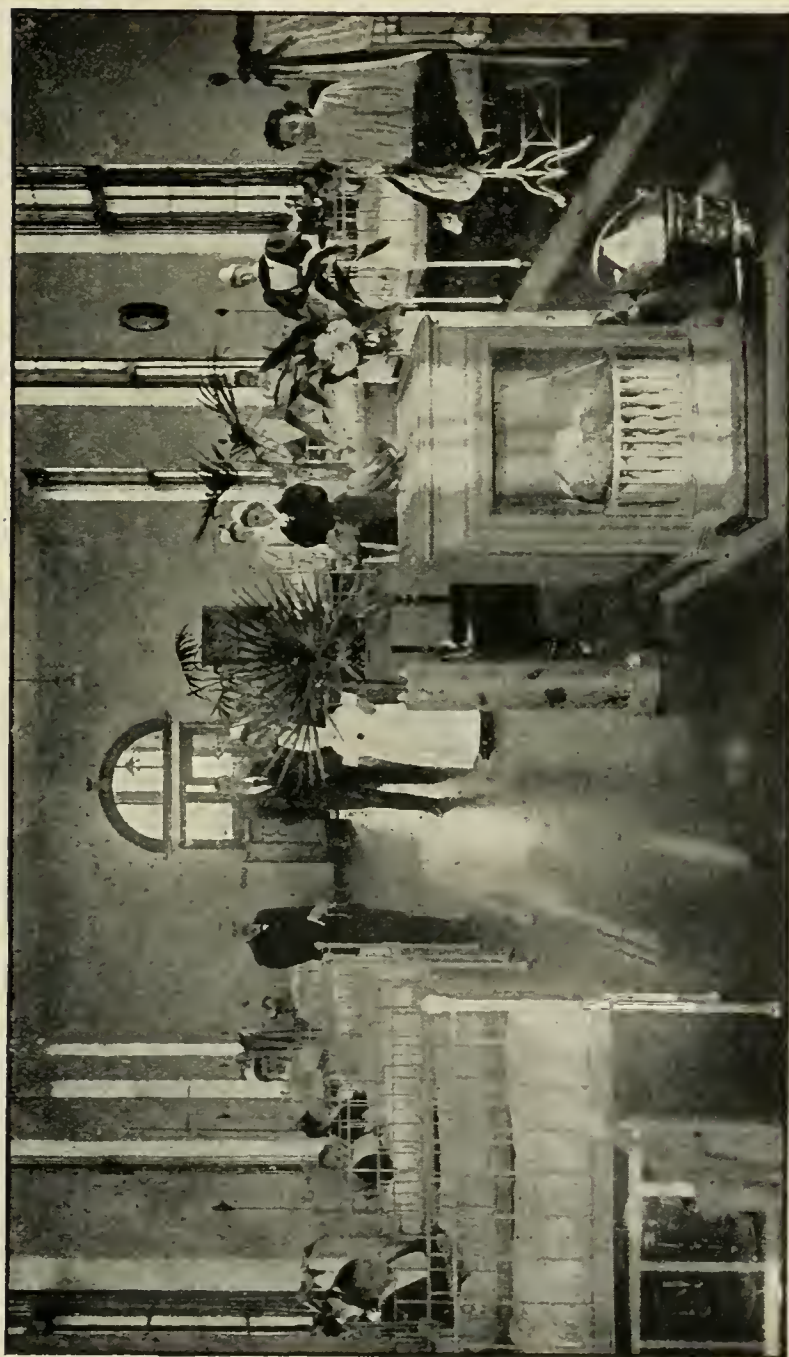
the ward is laid with teak boards, in narrow widths, and the walls are finished with parian cement, polished to a perfectly hard and smooth surface. The angles of the walls and ceilings are rounded, all ornamentation being excluded, and every precaution taken to avoid corners and ledges upon which dirt and dust can accumulate, and no pictures or other hangings are allowed in the wards for the same reason. The ward door entering from the corridor is of clear glass, thus allowing a full view of the ward without opening. This is a manifest advantage, as mothers can often get a view of their children through the door without visiting them, thus avoiding the risk which the child runs in many cases of having a fit of crying, which is so apt to retard its progress in serious cases. At the farther or south end of the ward is a double similar door leading out to the balcony, which runs across the end of the ward, and is useful for allowing children to be wheeled out in fine weather to get air and sun. A novel and attractive feature in connection with each ward is the play alcove. This is immediately outside the ward door, and between it and the door already described at the end of the corridor. It forms a considerable space suitable for playing, with a large oval window facing the south, and is of great advantage to the convalescent children, especially in winter, when they are unable to get out to the open air. In communication with each ward is a kitchen or pantry, in which the lighter or occasional diet is prepared, and the milk sterilized for the younger children on bottle-feeding, the ordinary diets being cooked in the hospital kitchen. Entering from the south end of each ward into the turrets, but disconnected by a cross-ventilated lobby, is, on the one side, a bath-room and lavatory, with pigeon-hole boxes numbered for the clothes of each child, and hung outside this a towel for each patient, and on the other side is a similar apartment, in which is a w.c. and sink for slops. This completes the arrangement of the wards and annexa.

#### SURGICAL DEPARTMENT.

Through the liberal and intelligent arrangement of the directors, this department is admirably furnished and provided with the most recent appliances. The ward with its side-rooms is on the same plan as the medical wards. It contains twenty-four beds, and is lavishly supplied, as are the other wards, with electric lights, both fitted and movable. The surgeons' room, which is used as a waiting and examination room, in which interesting



THE BATHGATE WARD.



THE PRINCESS BEATRICE WARD.



cases sent up from the out-patient department, or recommended directly by medical practitioners, can be examined. The operating theatre, which can accommodate eighty-four students, is admirably constructed, both for aseptic management of operations, and also for heating and light. Electric lamps, both fixed and movable, are provided, and electric sterilizers for ready use. These are so arranged as rapidly to heat the water and provide steam, and also to keep it going for as long as may be needed. The basins for hot and cold water are provided with glass tops and metal supports, and with pedals for turning off and on the supply, and are constructed so that no corners can catch dust, and that everything can be kept absolutely clean. The operating table is of metal, with hot water boxes that can be slipped in and out to maintain the heat of the patient in a long operation. Electric connections to batteries and cauteries are also provided. A dressing wagon, constructed of glass and iron on rubber wheels, with all the latest improvements, including a locked cage of solution bottles, is most useful in the ward. This and ward tables, also constructed of glass, brass and iron, and other articles which add to the beauty and efficiency of the ward, were purchased with part of the proceeds of a bazaar held by the sisters and nurses. We owe to the generosity of kind friends a new couch, a piano, and a musical box; also a self-propelling wheel chair with leg rest, which is much appreciated by the little surgical convalescents.

#### ISOLATION, OBSERVATION, AND EXTRA WARD.

These wards are situated in the second floor of either ward pavilion. The *Extra Ward* is mainly for use in accommodating the patients of each ward in succession during cleaning, or when fumigation is necessary on the outbreak of any infectious disease in the wards. The Isolation and Observation Wards are shut off from the end of the east corridor, and are complete in themselves as regards kitchen, lavatory, and nurses' accommodation, so that perfect isolation may be maintained, if need be, from the rest of the hospital.

The central portion of this, the second floor of the administrative block on the south side, is devoted to a suite of bedrooms and sitting-room for the staff nurses or sisters who have charge of each ward; and there is also a most comfortable and cheery sickroom for any of the nurses who may be invalided. The north



side of the corridor and the northern end of the ward wings are devoted to bedrooms for the nurses.

At the level of the second floor just described, the E shape of the plan and the principal staircase terminate, and the central administrative block alone is carried up to a higher story by the service stair. On this level is placed the kitchen, which is fitted up in the most approved fashion with all the most modern arrangements for culinary purposes. An excellent scullery and larder, and also a milk-house, adjoins the kitchen. There are also capacious storerooms. The remaining departments on this floor are the servants' hall, sewing, linen, and mattress rooms. The hydraulic lift placed in the wall of the service stair rises to this level, so that all stores and supplies are conveniently sent up to the kitchen; while the cooked food is by the same means sent down for distribution to the wards below. The service stair terminates at this level, and a wooden stair leads to the attic above, where are the bedrooms and dormitories for the domestics. The dormitories are divided by wooden screen partitions into cubicles.

#### LIGHTING AND HEATING OF THE HOSPITAL.

This is provided by electricity generated by a duplicate set of boilers, engines, and dynamos, arranged so that either engine may be driven from either boiler, thus guarding against the risk of a break-down, or of a stoppage for repairs at any time. There is also a large set of accumulators from which the all-night lighting is provided, enabling the engines and dynamos to cease running early in the evening. The wards are beautifully lighted by central hangings from the roof along the length of the ward. In addition there is a side light between the beds, and also a hand light which can be switched on to either of these brackets, the wire being the length of each bed. This novel and useful arrangement is found to be most serviceable for close examination of each patient when necessary, and particularly for ophthalmic or throat purposes.

The building throughout is heated by a hot water system, and, in addition, in each ward there is an open fireplace in the centre at either end. Fresh air is admitted to the wards in connection with the heaters placed along each side.

#### PATHOLOGICAL DEPARTMENT AND MORTUARY.

This is detached from the main building, and situated in the

grounds to the north of the administrative block, with a covered way leading from the ground floor beneath the main corridor, access being gained at the bottom of the service stair. The mortuary is a simple apartment, whose walls have been beautified by Mrs. Ramsay Traquair. The post-mortem room is well lighted, and fitted with suitable lavatory appliances, and railed off are seats for students. It is also fitted with an incubator for immediate use by the pathologist and his staff. Adjoining the post-mortem room is the pathologist's retiring-room.

#### OUT-PATIENT DEPARTMENT.

In the northwest portion of the hospital grounds are situated the out-patient department entering from Sylvan Place, and to the north of this the laundry and the electric lighting buildings. The building is of square construction, with ground floor and upper flat, the former fitted for the reception of the medical out-patients, the latter for surgical cases.

Entering from Sylvan Place off the lobby or porch is the Entrance Hall, on the right of which are the retiring rooms, where the children are dressed after examination, and the dispensary; and on the left the patients' waiting-room, doctors' room, and lavatory, which also serves as a cloak room, etc. In connection with and entering off this, is a small isolation room, in which any doubtful or suspected infectious cases are kept till seen by the doctor. A door at the farther end of the waiting-room opens into the consulting-room, a large and capacious apartment into which the patients are brought and stripped for examination. In this apartment are four rows of benches to accommodate students. A small dark room opens off the west corner of the consulting-room, and is utilized for ophthalmic and other similar purposes. The consulting-room is well furnished with lavatory appliances.

The surgical department is situated on the first floor, and has access by a broad stair from the entrance porch leading up to a well-lighted landing. On the left is the entrance to the waiting-room. Opening from the waiting-room is the door to the consulting-room, in which the patients are examined and most of the dressings done. Instead of being furnished with seats as in the medical consulting-room, there are a number of separate tables, so that the dressing of several cases may be proceeded with at once. In this way much time is saved, and the large

amount of practical work afforded by the department can be more conveniently distributed among the students in attendance. After being attended to, the patients find exit by a special door, instead of returning to the waiting-room, into the retiring-room. Yet another door opens out of the consulting-room, that to the operating-room, a remarkably suitable and well-lighted apartment, fitted with all the conveniences required by modern surgery. A small room opens off the operating-room, where patients are left after operation, while recovering from the effects of the anæsthetic, or if not so used it may be utilized for the examination of special eye and ear or other cases.

The entire buildings have been erected from the designs of Mr. George Washington Browne, A.R.S.A. The total cost is about £40,000. The hospital is closed in from the street by a handsome stone parapet and open balustrade, between which and the main doorway the ground is laid out as a carriage drive, with a large grass and flower plot in the centre. The royal arms are carved over the main entrance, and on the west wing is an ornamental tablet and bronze plate setting forth the generous gift of Lady Jane Dundas to the hospital.





# ARCHIVES OF PEDIATRICS.

DEVOTED TO THE  
DISEASES OF INFANTS AND CHILDREN.

APRIL, 1897.

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## SOME OF THE EFFECTS OF IMPAIRED VISION DURING CHILDHOOD.

In a recent paper on the early correction of ametropia, Dr. James W. Ingalls points out very clearly certain results of impaired vision which had not before received adequate attention. The detrimental influence of impaired sight upon the mental habits of children is not sufficiently appreciated. Habits formed during the critical years of development have a most important influence in modifying the character during later life. It goes without saying that the nature of the education which a child receives is a very potent factor in the development of his character. Dr. Ingalls refers particularly to the fact that much of the child's earlier education is unconsciously acquired by looking at surrounding objects. If, as occurs in the higher degrees of ametropia, objects appear indistinct and distorted, then the child's ideas are apt to be confused, and his methods of thought lack clearness and precision. And thus it happens that many children, on account of their visual defects, do not get credit for what brains they have. This condition may have a direct bearing on the child's whole future, perhaps relegating him to some uncongenial employment, instead of allowing the choice of the business or profession for which he may be best adapted. But



if, by virtue of great tenacity of purpose, studies are continued, the progress cannot be as satisfactory as it would otherwise have been, and subsequent attainments will be correspondingly limited. It is a waste of time to send a child to school when his eyes are not in proper condition to do the work assigned. When children find that they are not making as rapid progress as their companions, they are apt to become disheartened and lose all incentive to effort. A distaste for study results, and a disgust for everything pertaining to books.

Children are not quick to recognize the cause of the difficulty. They understand that they do not see well, and appreciate the fact that it is a drawback, but they do not realize how much it may have to do with their inability to keep pace with their more fortunate companions. Children are harsh in their judgments of each other, and very free in expressing their opinions. Many a child, through failures and harsh criticism, has reached the conclusion in his own mind that he is stupid, and that it is impossible for him to be proficient in school, who with properly fitted glasses might have been a proficient scholar. So much improvement can be obtained by such simple means, that it seems little better than criminal negligence to allow such children to pass unrelieved through the critical period of character formation. A thorough investigation of the sight and hearing should be instituted whenever a child fails to make proper progress in school, or acquires the reputation of being stupid.

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#### THE INFLUENCE OF IMPAIRED VISION UPON CHARACTER.

The influence of defective sight upon the formation of character is a most interesting study. Such influence is far more potent than would at first appear. The child who suffers from eye-strain has a more or less continuous headache. This distress may be so constant, and the victim so accustomed to it, that he becomes almost unaware of its presence during the periods when

it is least severe. When the burden is suddenly lifted by the application of glasses, he becomes conscious for the first time of the handicap he has been laboring under. The constant head oppression almost of necessity renders such children fretful and irritable. Study or use of the eyes causes added discomfort, and habits of perseverance and application are not formed. Without such habits, unless the child is abnormally gifted, good school standing cannot be attained, and the child acquires a dislike for school and for books. Eye-strain, in addition to the various direct symptoms which accompany it, certainly has a decided influence upon the general character.

Myopia, when not complicated by other defects, has also a pronounced influence upon the formation of character. Its effects, however, are quite different from those produced by astigmatism or other conditions which tend markedly to produce the symptoms known as eye-strain. Its influence is usually less marked and decided in girls than in boys, because it does not induce so radical a change from the regular type. If the defect is extreme, it shuts the child out from the world, and he seeks that entertainment which he can best enjoy. The near-sighted boy cannot play foot-ball, nor base-ball, nor any similar game, either without his glasses or with them. Inability to see the ball results in errors, which necessarily causes chagrin, and he soon relinquishes such games. His inability tends to separate him from other boys, for he cannot maintain himself to advantage in a crowd, or in general games. He seeks, therefore, more quiet games and pastimes, and is apt to become a reader of books. He makes a few intimate friends, and avoids the many, and in time gains the reputation of being exclusive in his tastes. He learns to amuse himself, and becomes well content with his own society.

The tendency thus developed is not wholly a bad one. Boys of this type are apt to be quiet in demeanor and unassuming, but at the same time self-reliant and competent. If the tendency is not carried too far; if the boy does not become a recluse,

afraid of men and the active affairs of life; if he is judiciously guided and trained, the resulting type of character is a good one. That a boy is very seriously handicapped by such a disability cannot be denied, and unless he has extremely judicious management, he is liable to develop into a diffident and nerveless recluse.

Myopia, even in mild degree, almost invariably places its stamp more or less clearly upon the character. Many of the more unfavorable tendencies can be overcome by the use of glasses, but not entirely. The adult can wear spectacles with comparatively little discomfort or inconvenience. With the child it is quite different. They are a heavy handicap to a vigorous and growing boy. After a number of accidents more or less serious, he either objects to wearing them, or is forced to abandon many of the recreations of his companions. The parents, forewarned by a little judicious advice on the subject, can do much to obviate these disadvantages and to lighten the handicap.

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### SURGICAL SCARLATINA.

The appearance of cutaneous eruptions during convalescence from surgical operations is not uncommon in the experience of surgeons. The exact nature of these eruptions has been the source of much discussion. That scarlet fever may occur under such circumstances, no one will deny. It does not necessarily follow, however, that because undoubted cases of scarlet fever have occurred subsequent to surgical operations, that every scarlatiniform rash appearing under similar circumstances is necessarily that disease. That many of the rashes which do thus occur are not due to scarlet fever, seems very clear. Osler believes that such eruptions are frequently nothing more than the red rash of septicemia. He alleges that "surgical scarlatina" is becoming less frequent with the less frequent occurrence of septicemia in surgical practice.

Dr. Blackader, in these pages, recently expressed the very

positive opinion that the mere presence of a scarlatinal rash, going on to desquamation, and associated with pyrexia, does not of itself warrant diagnosis of scarlet fever. Many eminent surgeons, however, have held that all such eruptions occurring in a surgical case are due to scarlatina. This opinion is especially prevalent in England. There are other equally eminent authorities, on the other hand, who hold that most of these eruptions are simple erythemas of no grave importance, the occasional occurrence of true scarlatina being simply a coincidence.

While there seems to be but little doubt that surgical patients are unusually susceptible to the infection of scarlet fever, and sometimes suffer from that disease, it seems equally clear, from all the evidence available, that very many of the cases believed to be surgical scarlatina are not, in fact, scarlatinal in their nature, but are due to other causes.

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#### THE ERUPTIONS FOLLOWING SURGICAL OPERATIONS.

The eruptions which are sometimes seen subsequent to operation or traumatism are admirably described by Dr. Francis R. Packard in a recent number of the *Medical News*. He reports two cases very closely simulating scarlet fever, both as regards rational symptoms and physical aspect, which proved subsequently not to be scarlet fever. The author quotes with approval the work of Albert Hoffa, a German writer, who has attempted to make a classification of the rashes which are seen in surgical cases. These are divided into three classes, as follows:

“1. Those which are due to vaso-motor irritation; chiefly seen after operation on parts which have an abundant nerve supply, and occurring a few hours after operation. They resemble an erythema, or sometimes an urticaria, and disappear a few hours after their appearance. Under this head he places puerperal scarlet fever.

“2. He terms the second class the ‘toxic erythemas.’ They have no prodromal symptoms, appear usually after a lapse of



twenty-four hours, or as late as forty-eight hours after operation, are accompanied by much febrile and usually some gastric disturbance. They generally present themselves as a diffuse redness, or as large isolated patches of redness with clear interspaces, appearing only on the body and extremities, and vanish in twenty-four hours without desquamation. These are the result of absorption of wound secretions, such as fibrin-ferment. They are analogous to the eruptions caused by the absorption of such drugs as carbolic acid and corrosive sublimate, or to the ingestion of antipyrin or copaiba.

“3. This is the class of infectious erythemas in which the eruption is but the indication of a general septic infection, and in it are included the eruptions of pyemia and septicemia. They may be erythematous or urticarial; may be diffused or in isolated patches. The eruption is sometimes petechial, sometimes pustular; sometimes it closely simulates the rash of scarlet fever. These eruptions are attributed to embolism of the capillaries with micrococci.”

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On February 18th, Dr. Rotch read a most interesting paper before the New York Academy of Medicine on the subject of infant feeding, an abstract of which will be found on another page. It was not to be expected that any new principle of feeding would be promulgated, or any very striking new facts announced, regarding modified milk. It was a genuine pleasure, however, to many physicians who had not before had the opportunity to listen personally to Dr. Rotch, who has done so much to place infant feeding on an exact and scientific basis. The most notable change in method to be observed was, undoubtedly, a tendency to use weaker milk mixtures than formerly. The percentages of fat and proteids now used are, on the whole, smaller than those formerly advised. In this respect most practitioners of experience are agreed, and employ, as a rule, weaker mixtures. This is particularly true in the case of young infants of weak digestion, the rule being to begin with a very weak

mixture, and gradually raise the strength to the point of tolerance. Farther than this we are unable to see that the teachings of Dr. Rotch have been materially modified, certainly not in the direction of less exactness. The presence of Dr. Griffith, of Philadelphia, was appreciated, and his discussion added materially to the interest of the meeting.

On the evening of February 22d, Dr. Osler read a most scientific paper on the diagnosis of malaria before a large and appreciative meeting of the New York County Medical Society. Both the paper and the discussion which followed it contributed to make up a very notable meeting.

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The following quaint but remarkable paragraph is published in the *Journal of the American Medical Association*, as illustrating by comparison the advances which have occurred in the department of pediatrics. It is taken from a work on the diseases of children by the Swedish pediatricist, Rosen von Resenstein, translated by Dr. Andrew Sparmann. There is but one chapter on nervous disorders of childhood in the book, which is entitled "Convulsions and Their Ten Causes." The chapter opens as follows:

"The nerves of children are very sensible and irritable. They are more numerous in proportion to their bodies than those of a grown person, and as they have many juices or fluids they are so much more softened. They are also covered with a very thin membrane, which makes their sensations so much the greater. For this reason children are subject to starting, and these, at whatsoever time of life they occur, are called convulsions; but when the whole body is affected, and the face at the same time appears bluish, it is then called an epilepsy."

## Bibliography.

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**Transactions of the American Orthopedic Association.** *Tenth Session, held at Buffalo, N. Y., May 19, 20, and 21, 1896.* Vol. lx. Philadelphia: Published by the Association. 1896. Pp. xxiv.—279.

The ninth volume of transactions of this vigorous Society compares most favorably with those which have preceded it, and demonstrates the fact that the Society is in an active and flourishing condition. Over thirty papers are included, and cover a broad field of orthopedic practice. A notable feature of the present volume is the number of excellent Roentgen pictures which it contains. The subject of orthopedic surgery makes the free use of illustrations possible, which renders the transactions an especially attractive volume.

**Artificial Anæsthesia. A Manual of Anæsthetic Agents, and their Employment in the Treatment of Disease.** By **Laurence Turnbull, M.D., Ph.G., Aural Surgeon to the Jefferson Medical College, Philadelphia.** *Fourth Edition, Revised and Enlarged. With Illustrations.* Philadelphia: P. Blakiston, Son & Co. 1896. Pp. xxiv.—550. Price, \$2.50.

This is a most extensive and complete treatise on anæsthesia and anæsthetic agents. It enters very deeply and thoroughly into all phases of the subject, except the administration of anæsthetics to children. Very little or nothing is said regarding the selection of anæsthetic agents for children or their method of administration. Many questions certainly arise in the mind of the practitioner when about to anæsthetize a young child. It would seem that many practical things might have been said regarding the choice of an anæsthetic for such a patient, its administration, length of time to be employed, and precautions to be observed. Aside from this defect, the book leaves little to be desired.

## Society Reports.

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### NEW YORK ACADEMY OF MEDICINE—SECTION ON PEDIATRICS.

Stated Meeting, Feb. 11, 1897.

J. HENRY FRUITNIGHT, M.D., CHAIRMAN.

#### CONGENITAL BILATERAL ABSENCE OF THE RADIUS.

DR. HENRY LING TAYLOR exhibited two skiagraphs of a case of double club-hand in which palpation had indicated an absence of the radius, and the skiagraphs had confirmed this belief. He also exhibited skiagraphs of another case of absence of the radius that had been treated by osteotomy of the ulna. In many of these cases, he said, the ulna was bent on account of the contraction of the tissues on the radial side, and an osteotomy was particularly indicated in these cases. Dr. McCurdy, of Pittsburg, had adopted the plan of severing the ends of the ulna, and fastening the severed ends to the carpus. Dr. Reginald H. Sayre had operated by taking out one or two of the small bones of the carpus, and placing the ulna in the socket thus made. About forty-five cases had been reported of complete absence of the radius, of which twenty-one were bilateral.

#### STRICTURE OF THE URETHRA IN MALE CHILDREN.

DR. L. BOLTON BANGS read a paper on this subject. He said that reports of cases of urethral stricture in children had appeared from time to time in the medical journals, but the subject of acquired stricture, as a result of a post-natal pathological process other than trauma, had not received proper consideration. He had been led to believe that enuresis and dysuria might be the result of such a process. He defined stricture as any unnatural narrowing of the urethra in any part of its whole length. Cases were on record of children, from two years of age and upward, who had received traumatism of the urethra, and who had presented later in life symptoms of extreme gravity; hence the proper time for the treatment of such a case should be immediately after the injury. Physiological rest should be secured by perineal section and drainage, but the an-



terior portions of the urethra must not be overlooked at the time of the operation. The speaker said that the etiology of acquired stricture was often very obscure. In some cases there was a direct history of gonorrhœal infection, but in many there was no history of a preceding catarrhal or blenorrhagic inflammation. He had come to believe that many of these cases were the result of the extension into the urethra of a balano-posthitis. Masturbation had been given as a cause of organic stricture of the urethra. He had personally met with two cases of stricture of the urethra, which, in his opinion, very probably originated in a balano-posthitis.

The first case was that of a boy of three years and five months, who had been brought to him with a history of having been in excellent health for the most part up to the beginning of the present trouble. About two years before he had had an attack of diarrhœa, followed by painful and difficult urination. At times there would be spasms of pain which would make the child grasp the glans penis. Examination failed to detect any vesical calculus. The urine was alkaline, and exceedingly offensive. With the aid of a No. 14 French catheter the bladder was washed out, and it was found that the bladder would hold twenty ounces of fluid. It was evidently in a condition of over-distention and atony, as manual pressure was required to empty it. Exploration under an anæsthetic showed no stone. A stricture admitting a No. 14 French instrument was found just within the meatus. This was incised, and on inserting a No. 15 French bougie, two other strictures were detected, one an inch and a quarter, and the other two inches from the meatus. Both were apparently soft and yielding. The meatus was still further divided so as to admit a No. 20 French instrument, and the bladder was emptied and irrigated. He had persevered in the dilatation of the urethra up to a No. 20 French. The urine and the symptoms improved rapidly under this treatment, and a later report showed the child to be apparently well. There was no history in this case of a urethral discharge, although it was stated that the foreskin was long and caused irritation.

The second case was that of a boy of fifteen years, who, for some years, had suffered from scalding urination. When thirteen years of age, he had had an attack of complete retention of urine. It had been necessary to give an anæsthetic and pass a catheter every day for a week. He had been subsequently cir-

cumcised. Following the catheterizations, there had been a greenish-yellow discharge from the urethra, which had lasted for a year, and had been finally checked by the use of an injection. On examination, Dr. Bangs had found the urinary organs apparently normal, and no urethral discharge present. A stricture admitting a No. 10 French was found a short distance within the meatus. The boy was anæsthetized, and the meatus and stricture divided. Several other points were divided by the *maissonneuve* and the *urethrotome*, and finally a No. 26 French instrument was passed. Subsequently a sound had been passed at intervals of a few days. The boy had remained perfectly well, and urinated perfectly. In this case, also, the etiology was doubtful. The strictures were firm and fibrous, such as are observed in the adult.

DR. R. H. GREENE said that he had seen many cases of urethritis in children, yet he could recall no case of stricture. In the reported cases of stricture in children, it was usually stated that either instruments or injections had been used. Four years ago he had had under observation several patients with posterior urethritis, and also with "bunches" in the anterior urethra, admitting from No. 15 to No. 25 French. He had noticed that while treating the posterior urethritis with irrigations of a weak solution of nitrate of silver, using only a small instrument, that these "bunches" would not infrequently disappear. With the help of Dr. Ira Van Gieson, he had examined post-mortem a number of urethral strictures, and had found erosion of the mucous membrane, and beneath this granulation tissue, and sometimes also fibrous tissue. This study had led him to believe that the process always began practically as an ulcer in a long, narrow sinus, and, like other ulcers, tended in time to become fibrous at the base. It was not until this fibrous tissue formed that a true stricture developed. In several cases of urethritis in children, and in adults having a long prepuce, he had carefully looked for an infection, but, so far, with negative result. He could understand, however, that if from any cause, however slight—not necessarily a specific urethritis—the mucous membrane had been even slightly eroded, that an irritating discharge from the glans penis might give rise to ulceration, and eventually to stricture.

DR. ROBERT ABBÉ said that the subject of the evening was of

special interest, because it was scarcely mentioned in our textbooks. Notwithstanding a large experience in children's hospitals, he had only once met with a stricture of the urethra in a child. He had also seen very few cases of urethritis in children, and then usually as a result of infection produced by dissolute women with the idea of themselves getting rid of the disease by giving it to a child. The common purulent vulvo-vaginitis seen among children was certainly very much like a true gonorrhœa, yet it should be remembered that the usual sequelæ of gonorrhœal infection were exceedingly rare in such cases. In male children it was probable that the mild cases of inflammation of the anterior urethra were due to infection, not with the gonococcus, but with the smegma bacillus. The case that he had reported was that of a child of three years, who had quite a violent inflammation. The child left the hospital apparently cured, but was brought back subsequently by the mother because it was suffering great pain. Examination showed the bladder to be greatly distended, and aspiration immediately relieved the bladder of a large quantity of urine. After consultation with Dr. Bangs, he had done an external urethrotomy, and then, with an Otis urethrotome, had cut the urethra up to No. 22 French. It was subsequently dilated to No. 23 French. The child made a perfect recovery. The perineal section was of no moment, the sinus healing very promptly. He saw no reason for employing different treatment in children from that used in adults for urethral stricture. In cases of traumatic stricture of the urethra in children, however, he would not always feel inclined to perform perineal section. These injuries usually arose from falling astride a board. There was sometimes only a slight hemorrhage without extravasation of urine. Where the injury appeared to be slight, it was probably safe to leave such cases to nature. If, however, there was evidence of considerable damage to the tissues, and of free hemorrhage, perineal section was certainly indicated.

Regarding congenital strictures, Dr. Abbé said he had had no personal experience. He had examined the urethræ of children who had suffered from enuresis and difficult micturition, yet had never found stricture or malformation of the urethra. Probably most of these cases were due to slight adhesions of the prepuce.

DR. ARTHUR L. FISKE said that he had never met with urethritis in the male child, although vulvo-vaginitis was not uncom-



mon in female children. He agreed thoroughly with Dr. Greene that in many instances urethritis was kept up by the use of too strong injections, or by the too frequent passage of instruments.

DR. CHARLES L. GIBSON called attention to the fact that in the case referred to by Dr. Abbé, the cutting of the urethra to such a large calibre had greatly facilitated the after-treatment.

THE CHAIRMAN said, regarding the nature of vulvo-vaginitis in female children, that in a hospital with which he was connected there had recently been an epidemic of this affection. The cases had been quite intractable to treatment. In all of them the gonococcus had been found; in two there had been salpingitis, and in one gonorrhœal rheumatism. The diagnosis of salpingitis had been made by palpation through the rectum and vagina, together with the associated febrile movement. In one case it had been feared a laparotomy would be required, but it did not become necessary. None of the cases was fatal. He had never met with a case of urethritis in the male children in this institution, nor had he been aware of any of them suffering from urethral stricture.

DR. BANGS, in closing the discussion, said that he did not believe in circumcision for all male children, but he did advocate circumcision for all male children in whom there was evident obstruction from a narrow and long prepuce, or where there was any other sound reason, aside from the mere fact of there being a redundant prepuce. His experience had led him to feel that balano-posthitis was a very probable cause of stricture of the urethra, yet he was not in a position to demonstrate this point.

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## NEW YORK ACADEMY OF MEDICINE.

General Meeting, Feb. 18, 1897.

EDWARD G. JANEWAY, M.D., PRESIDENT.

### THE USE OF MODIFIED MILK IN HEALTH AND DISEASE.

DR. THOMAS M. ROTCH, of Boston, read a paper with this title. Speaking of the plan, advocated by some, of modifying the milk at home, he stated that such a method was necessarily inexact and unreliable by reason of the great variations in the milk from day to day, even when supplied by an honest dealer. It had been found that there was a growing tendency among



those using the Walker-Gordon Laboratory milk to prescribe lower percentages than formerly. For his own part, he now advanced the proteid percentage much more slowly than he was formerly wont to do. Photographs were exhibited on the screen with the object of showing that there was practically no difference in the fineness of the emulsion in unseparated milk and in milk that had been separated and re-combined. Special emphasis was laid in the paper upon the necessity of feeding premature infants upon a milk differing very materially in composition from that of ordinary breast milk. The speaker expressed the belief that many premature infants had been lost by a failure to recognize the necessity for such modification, it having been assumed—although, as experience had shown, erroneously—that the best milk for such infants was that obtained from the mother's breast. The reason that it was necessary to so markedly modify the milk was that in those born before term the gastro-enteric tract was ill-developed, and its functions were, in consequence, easily overtaxed. For a child born at the seventh month, the percentages should ordinarily be: fat 1; sugar 3 or 4; and proteid .35; instead of the usual composition: fat 3; sugar 6; and proteid 1.

As an example of the changes in the percentages that would ordinarily be required in prescribing modified milk for the first six months of life, Dr. Rotch quoted the following figures: First, fat .50; sugar 4; and proteid .25. Next, fat 1; sugar 5; and proteid .60. Then, fat 1.5; sugar 5.5; and proteid .75. Then, fat 3; sugar 6; and proteid 1. Then, fat 3.5; sugar 6.5; and proteid 1.5; and lastly, about the sixth month, fat 4; sugar 7; and proteid 2. After this the percentages should be made to gradually approximate those of unmodified milk, *i.e.*, fat 4; sugar 4.5; and proteid 4. In his opinion, this gradual and scientific process of weaning was the only thoroughly safe and reliable method.

In a large number of infants of about six months, recently treated for diarrhœa by the use of the modified milk, the average prescription had been: fat 2.6; sugar 5.8; and proteid 1.2; and the average quantity at each feeding had been 4.5 ounces. The temperature at which the milk was given was also not unimportant, as he had found that even milk properly modified would not be well digested if given too hot. The temperature could be ascertained with sufficient accuracy for practical purposes, without introducing the thermometer into the milk, by placing

the bottle with the milk in the cooling vessel provided for the purpose. This vessel should contain water at the temperature at which it is drawn from the tap, *i.e.*, about 40° F. If the bottle of milk were left in this water for three minutes, the milk would be cooled down to about 105° F.; if for three minutes more, the milk would have a temperature of about 98° or 100° F.

DR. J. P. CROZER GRIFFITH, of Philadelphia, said that he had been surprised at one clinical fact that was opposed to our theoretical ideas, *i.e.*, that very many infants required less than one per cent. of proteid in the milk. As an example of the part played by idiosyncrasy, he cited the case of twins under his care who had not done well until the milk had been differently modified for each infant. Commercial infant foods were rarely needed at the present day, and they were harmful, if only because they were the means of making the laity try many dangerous experiments in infant feeding before seeking proper medical advice. The slow process of weaning described in the paper was, to his mind, the only rational and scientific plan.

DR. A. JACOBI said that he was pleased to note in the paper a tendency to speak less positively regarding the actual percentages required by infants at different ages. We should never lose sight of the fact that in infant feeding we have to deal, not with a test-tube, but with an organic being subject to frequent and marked changes. It must be evident that mathematically accurate percentages in milk were not absolutely essential to the infant's welfare, otherwise it would not happen that the fæces of a healthy infant could obtain very widely varying quantities of fat without any apparent disturbance of the infant's health. The exactness obtained in the laboratory was very desirable; the essential facts to bear in mind were the general principles laid down in the paper. His experience had been entirely opposed to the view that the addition of the cereals to milk did not lessen the size of the curds.

DR. L. EMMETT HOLT said that all cow's milk required some form of modification, but that the management of a baby who had been badly fed for some months was quite different from that of an infant who had been properly fed from birth. Not every child could be fed on even carefully modified cow's milk, and hence for some a wet-nurse was indispensable. In pre-

scribing modified milk, the great point to remember was to keep down the percentages of fats and proteids, and be governed chiefly by the changes in the weight of the infant. He believed that it was better to adhere strictly to the milk elements, modifying the proportions and the quantity to suit the individual case.

DR. ALLEN M. THOMAS said that when modified milk had been first introduced into this city he had fondly hoped that it would serve as a substitute for the objectionable wet-nurse. In this he had sometimes been disappointed. After a rather extensive experience with it, he was still compelled to give breast milk the first place.

DR. W. P. NORTHRUP said that the expensiveness of this laboratory milk had made him attempt to have the modification carried on at home. Notwithstanding the most precise directions, and a personal attention to detail, the plan had often proved disastrous. This was particularly true of two children, whose lives, he firmly believed, had been eventually saved by a resort to the Walker-Gordon modified milk.

DR. JOSEPH E. WINTERS said that had it not been for Dr. Arthur V. Meigs, of Philadelphia, who had first published the true composition of human breast milk, we would probably be as much in the dark now as ever regarding the true principles underlying successful infant feeding. He was the first to show that human breast milk contained only about one per cent. of proteids, and that it was due to the difference in the percentage of proteids, and not to any mysterious quality, that unmodified cow's milk was unfit for the infant. He did not by any means undervalue the help that had been given by the Walker-Gordon Laboratory, but he wished to emphasize the fact that it was possible to successfully modify milk without its aid. Even the laboratory milk could be made a power for evil, if prescribed by those not fully conversant with the principles of percentages. He had seen one child develop scurvy as a result of such ill-judged prescribing, and go on to complete recovery on the same milk by properly adjusting the percentages.

DR. ROTCH, in closing, said that even the milk of wet-nurses often required modification. He did not wish to withhold from the Meigs family any of their well-deserved credit, but Meigs insisted that the percentage of proteids in milk should be invariably one per cent. This was not in accord with the clinical experience of those who were thoroughly conversant with the subject of the modification of milk, and was at variance with the principles upon which the milk laboratory was founded.



NEW YORK ACADEMY OF MEDICINE.—SECTION ON  
ORTHOPEDIC SURGERY.

Meeting of Feb. 19, 1897.

A. B. JUDSON, M.D., CHAIRMAN.

Dr. SAMUEL KETCH read a paper entitled, "The Orthopedic Treatment of Spastic Paralysis in Children." Patients thus affected are those whose mentality is (1) *nil*, (2) diminished, and (3) normal, or nearly so. The treatment should include special education of the muscles. Electricity in any form is unavailing. If used at all, the constant current may have a good sedative effect. Massage is of but little value. Mechanical treatment is directed to improvement in locomotion or reduction of deformity, and produces its best effects in patients whose intellects are least impaired, and in deformities and disabilities of the lower extremity, especially when the judicious use of the super-incumbent weight corrects the elevated and inverted feet. Tenotomy is certainly a useful resort. With growth there is a lessening of the spastic element, and the degree in which this has been displaced by a fixed deformity should be considered in undertaking mechanical or operative treatment. Patients in whom the deformity is the result of marked spasm resist treatment or are liable to relapse. Apparent mental improvement occurs with better locomotion and general improvement.

DISCUSSION.

Dr. FREDERICK PETERSON.—A great deal may be done by pedagogy, or education of the muscles, by efforts of the will, by active, not passive, movements—as, for example, using the typewriter or playing the piano in the case of a paralyzed hand.

Dr. WILLIAM M. LEZWYNSKY.—I have seen no benefit from electricity. More can be obtained from efforts of the will. Persistent efforts to walk are sometimes sufficient to restore the function of the muscles. In cerebral palsy little can be done.

Dr. R. H. SAYRE.—I have found faradism a good way of giving gymnastic exercises to muscles not under control of the patient. After various tenotomies to place the parts in normal relation to each other, we can do a great deal in the way of educating these muscles.



DR. V. P. GIBNEY.—In the prevention of these deformities, further advance is to be sought in researches into the underlying neurological condition.

DR. H. L. TAYLOR.—Benefit is to be derived from mechanical treatment and tenotomy. The contraction is not easy to control by braces; it will return when the brace is removed. Tenotomy not only makes it possible to retain the foot in position, but has a decided effect upon the spasm. The tendon is cut for the specific purpose of relieving the spasm. A very marked mental improvement follows this treatment.

DR. H. W. BERG.—As many of these cases accompany idiocy, pedagogy of the muscles will apply most aptly. The sense of sight should be developed by bright colors, hearing by the use of bells, and increased motor ability developed by repeating certain motions a great number of times. Years of patient toil may thus be well spent.

DR. N. M. SHAFFER.—As long as approximately normal movements can be obtained by passive motion, tenotomy is not needed. In time, however, the spastic contraction becomes a contracture with permanent deformity. It is only where these changes are observed that tenotomy is indicated, and the operation is then followed by much better results than when done at an earlier stage.

DR. PETERSON.—In these cases the paralysis is not to be considered as the result of the idiocy. Degrees of idiocy, palsy, and epilepsy are all symptoms of cerebral injury received before or during parturition, or within two or three years after birth. Idiocy is a symptom often associated with spastic paralysis. In idiots we find sclerosis, atrophy, and cysts, but not hemorrhage. In spastic paralysis, while we find meningeal hemorrhage, there are few cases in which deficient development of the brain is found post-mortem. In these cases we have no irritability of the spinal cord, but rather exaggerated reflexes from cutting off of inhibition. Mental improvement often follows education of the muscles, but where it attends any muscular change from contraction to contracture, it is probably a coincidence.

DR. SAMUEL KETCH.—The benefits of special education of the muscles are best obtained in the schools conducted for the instruction of the feeble-minded.

## THE PHILADELPHIA PEDIATRIC SOCIETY.

Meeting of Feb. 9, 1897.

J. P. CROZER GRIFFITH, M.D., PRESIDENT.

THE PRESIDENT presented two cases of *unilateral tremor*, the first occurring in a boy of twelve years of age, in whom the condition had been present from earliest infancy and was associated with spastic symptoms. In the second case, a boy of eighteen months, the tremor had only recently developed and was unattended by any increase of muscle-tonus.

DR. ALFRED HAND exhibited *a case of recovery from cervical pachymeningitis*. The patient, a girl of sixteen years, was in the Children's Hospital in 1892, with a spastic paraplegia, with atrophy in the distribution of the median and ulnar nerves and with the hands held in the characteristic position of over-extension; there were also pains radiating down the arms, with paresthesia in the hands. At the present time the patient feels perfectly well, and the only trace of her former condition is the presence of exaggerated knee-jerks and ankle clonus.

DR. SINKLER.—The case is interesting because the symptoms were very much like those of syringomyelia. The loss of temperature sense, the exaggerated knee-jerks, the loss of power in the flexors, with retained tonicity of the extensors, reminds one very much of syringomyelia. In syringomyelia the diseased area is usually in the upper part of the cord and the same nerves are therefore involved which are affected in cervical pachymeningitis. The marked difference is that in syringomyelia there is absence of pain, while in cervical pachymeningitis pain is a prominent symptom. In syringomyelia, there is loss of thermal sense, while in cervical pachymeningitis the power to distinguish heat and cold is not impaired.

DR. GRIFFITH.—I disagreed with Dr. Hand in the matter of diagnosis when the case was at the Children's Hospital. Events have proved that he was quite right, and that I was mistaken. In company with several others who saw the girl, I was in doubt as to the history of pain. It seemed to me that the idea of pain had been suggested to her by the questioning. Looking at her now you can have no idea of her condition at that time. She was wasted, atrophic and almost totally helpless. She then looked like a case of amyotrophic lateral sclerosis.

DR. J. P. CROZER GRIFFITH presented Freeman's apparatus for the Pasteurization of milk, and read a paper upon the subject.

DR. PRENDERGAST inquired if anyone had made bacteriological examinations of the sterilized milk put in the market by different firms. It had given him satisfaction.

DR. MILLER.—I am familiar with this instrument of Dr. Freeman's and I think it is a very valuable addition to our means of infant feeding. I agree with Dr. Griffith in regard to the unreliability of domestic Pasteurization, and yet for some unaccountable reason, many people will not use an apparatus which they have to buy. Therefore, we are often forced to adopt some method which they regard as simpler, as anything that goes by the name of a sterilizer or Pasteurizer is supposed to be complicated. Some years ago I tried experiments with the method so often advised of milk sterilization by placing the bottles in a dishpan of water and then boiling the water. Of course the results vary a great deal with the heat of the stove, which is the great objection to this method; but if the direction is given that the water must be actively boiled for ten minutes the result will be satisfactory. The direction must be given to boil ten minutes, and then the bottles must be immediately taken off, because the temperature rises very rapidly after that, so that in ten or twenty minutes the temperature is  $190^{\circ}$  or  $200^{\circ}$ . If at the close of ten minutes the milk is taken off and rapidly cooled by pouring cold water into the pan, the milk I have found, over and over again, will keep twenty-four hours in summer. I do not mean to say that this can in any way take the place of this instrument, which is accurately tested and meets all the indications in the case. In regard to Pasteurization of milk, I think it is a thing we ought to do without if we can. In the cities where we do not know our sources of supply, and in the summer when the changes are so rapid, it is quite necessary, although fermented milk is not always dangerous.

DR. WOODWARD said that if any member of the Society had a case of an infant not being well nourished at the breast and would furnish him with a sample of the mother's milk he would give a quantitative laboratory analysis without any fee, if in return a history of the case was given to him. The milk could be sent to the Pepper Laboratory, University of Pennsylvania.

DR. J. P. C. GRIFFITH.—I have no experience with the examination of milk for germs. I have been interested in reading the



article by Flügge who has gone extensively into the analysis of various commercial sterilized and Pasteurized milks and condemns them all as dangerous articles. Of course he views the matter from the German standpoint and condemns German preparations, but what he says applies equally well to others. One can easily see that milk that is sterilized or Pasteurized in any way, unless it be with just enough of it in each bottle to feed the baby at one time is a dangerous thing, because it gives the mother a feeling of confidence, and she uses it wrongly. We must impress upon mothers that such milk is just as liable to spoil as any other milk, if it is exposed to the chances of spoiling. I would refer also to the studies by Lewi and Koplik, which show that Pasteurization only delays the growth of bacteria and that milk so treated is distinctly more apt to spoil than sterilized milk, since the number of germs in it is greater. It is on this account that I feel that dishpan Pasteurization is dangerous. If a physician with the intelligence of Dr. Miller could himself conduct Pasteurizing of this kind, the baby would be comparatively safe, but we are not going to find nurse-maids capable of such a thing. Therefore I would rather see milk sterilized than Pasteurized in any such way. In Dr. Freeman's last paper he has reduced the Pasteurizing temperature to  $155^{\circ}$ , which makes the milk more digestible and yet comparatively free from danger. His first suggestion was to Pasteurize at  $178^{\circ}$  F. If we are intending to Pasteurize at  $155^{\circ}$  it is more important than ever to use accurate means of reaching this degree.

DR. STEWART stated that one of the firms supplying sterilized milk to the market performed the process only twice a week during the winter.

DR. HOWARD S. ANDERS exhibited the skiagraph of a foetus. He said: "This skiagraph is one that was shown before at a meeting of the County Medical Society, when Dr. Stern read a paper. The case was one of my own. Besides certain admirable features in the mechanical execution of the skiagraph, there are a few points of interest which I will mention: The mother of this child was a colored woman, weighing about ninety-two pounds, very small, with a pelvis of minor type. I had her sent to the Samaritan Hospital, and my colleague there, Dr. Haehnlen, thought premature labor should be induced, because the uterus was fairly riddled and bosselated with fibroid tumors. It was



done, and this child was born, and lived a week. It measured thirty-seven cm., or about fourteen and three-quarters inches in length.

"After death, Dr. Goodspeed offered to make a skiagraph of it. The body was applied to the negative plate with shutters on, and four or five layers of bandage bound the child down, so as to have the extremities as flatly placed as possible. The outline of the skull, of the spinal column—indeed, of nearly all the bones—is distinct, and one very nice feature shown throughout is the absence of any complete joint formation. You see only the lighter shadow of cartilaginous tissue. No epiphyses are visible. The view is as though looking through the back of the child. If one were to outline by topographical percussion the liver and heart areas, one could hardly do it more perfectly than are the shadow areas."

DR. TULL.—I should like to ask if a skiagraph has been taken of a fœtus before birth.

DR. ANDERS.—I have a vague recollection of having seen in German literature that some attempts were made to get a skiagraph of a fœtus in utero, but am not sure whether it was accomplished.

DR. C. H. WEBER reported a case of *Noma*.

DR. ALFRED STENGEL.—This case, which I saw before death, impressed me by the remarkable vitality this child possessed. Although its entire mouth was exposed, its tongue almost protruding externally, and its teeth being laid bare, it preserved a degree of vitality that was really remarkable. Also it is worthy to note that the rapidity of spread of this process was unusual.

DR. ALFRED HAND, JR.—There is a tendency on the part of some writers to class certain cases of ulcerative stomatitis which assume a gangrenous process, as *noma*. These cases, which may arise as ordinary ulcerative stomatitis, progress to induration of the cheeks, loss of teeth, and denudation of bone, and in some cases terminate fatally, or leave marked deformities, without, however, perforating the cheek. It seems best to consider these as ulcerative stomatitis, and not as *noma*, reserving the latter term for cases such as Dr. Weber has reported.

DR. JOSEPH SAILER.—I should like to ask if there was any tendency on the part of the process to limit itself to the median line.

DR. C. H. WEBER.—It did limit itself to the median line.

DR. J. H. MCKEE read a paper upon *Enuresis*, discussing the physiology of micturition and the causes of enuresis.

DR. J. F. PRENDERGAST read a paper upon *A Simple Remedy for Enuresis*, which consisted in douching with cold water, a method which has been almost uniformly successful in a large number of cases.

## Current Literature.

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### MEDICINE.

**Williams, Dawson: The Glandular Fever of Childhood.**  
(*The Lancet.* 1897. Vol. 1., No. 3.)

Under the name "Glandular Fever (Drüsenfieber)" E. Pfeiffer, in 1889, described a condition observed in childhood which he contended was an acute specific fever hitherto unrecognized. The symptoms of the disorder as noted by him and elucidated by subsequent writers are briefly as follows:

The patient, a child under fourteen years of age, becomes suddenly ill, the temperature is found to be raised— $101^{\circ}$  to  $103^{\circ}$  F.—there is anorexia, nausea, sometimes vomiting, coated tongue, constipation, and, perhaps, some ill-defined abdominal pain. The most prominent and characteristic symptoms, however, are stiffness of the neck, tenderness in the anterior triangle, and some pain on movement of the head and on deglutition. There may be some undue redness of the pharyngeal mucous membrane, but throughout the whole course of the illness nothing like definite pharyngitis or tonsillitis. On the second or third day a swelling is noticed in the neck, which is found to be due to three or four enlarged lymphatic glands, which can be felt beneath the sterno-mastoid muscle and along its anterior border. The temperature becomes higher and usually touches  $104^{\circ}$  F., and the ordinary symptoms of pyrexia are present. The glands, which are tender, remain swollen for from two to five days and then begin to diminish. The glands first affected are, as a rule, those of the left side, and the pain on movement may lead to the head being flexed toward that side. Before the glands on the left side have begun to subside, those on the right begin to enlarge and in a day or two attain a size corresponding to that reached by those on the left side when at the maximum. Tenderness of the abdomen may be a very marked symptom, and in a large proportion of cases the mesenteric glands can be felt to be enlarged. The liver is enlarged almost invariably, and the spleen in more than half the cases. The other cervical glands may also become enlarged, the axillary and inguinal glands less

often. The disease is mild and is seldom or never the direct cause of death, but it leaves the child in an anæmic and depressed state, which may last long after all trace of enlargement of the lymphatic glands—which has usually ceased in ten days or a fortnight—has disappeared.

It is obvious that the specific characters of the disorder are not well marked. Enlargement of the cervical glands secondary to various local lesions is of so common occurrence in childhood that the specificity of Pfeiffer's "Drüsenfieber" has not met with general acceptance. It can hardly be asserted that his arguments have been refuted; it would be more correct to say that they have for the most part been ignored. The author has for some years strongly suspected that this attitude was mistaken. He has seen in the out-patient department of the Shadwell Children's Hospital during the last few years a considerable number of cases answering to the description of glandular fever, but it is difficult in London to trace a history of infection in connection with any of the diseases of childhood, owing to the immense number of possible opportunities of infection. Occasionally, however, was observed several children of the same family to be affected in succession.

The most distinctive point is that the swelling and tenderness of the glands occur without obvious lesion of the pharynx and tonsils, and are altogether disproportionate to any slight pharyngitis which may be present. The several glands can be distinguished on palpation; the skin moves freely over them and is little, if at all, reddened. The spontaneous subsidence of the adenitis is also noteworthy. The author has not met with a case in which suppuration occurred, and, according to all writers on the subject, this is an accident which does not occur, or occurs very rarely. The glands affected are, no doubt, those which are liable to become enlarged in affections of the pharynx; but tonsillitis causes at first enlargement only of the highest of the deep cervical glands—that which lies on a level with the angle of the jaw. If the lower glands become enlarged it is at a later date and to a less degree. The glands which first become enlarged in association with dental disorders are those which lie transversely along the inner aspect of the lower border of the body of the inferior maxilla. Even in acute pharyngitis it is, according to his observation, very unusual to observe an enlargement, sudden and almost or quite uniform, of all the deep cervical



glands. Moussous lays stress on the severity of the general symptoms, which in one of the cases he records, raised a suspicion of typhoid fever. In both the cases, which he gives at length, the child, on the third or fourth day of its illness, suffered from a paroxysmal cough ending in vomiting, but without the characteristic whoop or glairy expectoration of whooping cough. This appears to indicate that the tracheo-bronchial glands may be enlarged during the course of the illness.

Pfeiffer observed that the disease occurred in very limited epidemics generally affecting a single family, but attacking most of the members who had not passed childhood. Those writers who, after Pfeiffer, have described cases, have laid stress upon the absence of any discoverable local lesion capable of accounting for the adenitis. The pain on swallowing is attributed to the enlargement of the glands, for pharyngitis, even when present, is only in very rare cases severe. Hesse, one of the most recent writers on the subject, reports three cases in the same family, all of whom suffered from severe nephritis. Heubner, Starck and others, have recorded cases in which the same complication occurred. Hesse argues that the existence of this complication is strong evidence in favor of the specific theory, and argues that the lymph-adenitis is either a manifestation of an acute specific disease *sui generis*, or of an abortive form of one of the exanthemata. He dismisses the second alternative rather lightly, but it may be observed that rubella is believed by some to occur occasionally without rash but with marked swelling of the glands along the sterno-mastoid muscle. Further, some evidence exists to show that mumps may occasionally affect the lymphatic glands of the neck without any discoverable inflammation of the parotid or other salivary glands. It is, the author believes, unnecessary to argue this point, because a recent communication made by Dr. Park West, to the New York Academy of Medicine, seems to refute all objections of this order. An extended abstract of Dr. West's paper is then given, the full text of which will be found in the issue of the ARCHIVES for December, 1896.

The incubation period cannot be stated positively. Hoerschelmann thought it was usually from eight to ten days in his cases, with extremes of five and fifteen days. Park West states that "many more children came down on the seventh day after exposure than upon any other day."



As to the pathology of the condition there is, in the absence of any bacteriological investigations, much room for difference of opinion. Comby suggests that it is due to "an attenuated streptococcic infection, of which the point of entry is probably the surface of the tonsils." He would, therefore, appear to be opposed to the view that the condition should be considered an acute specific infection, and this seems to be the view also of Ashby and Wright. Comby, however, relies largely upon the observations of Neumann, who found staphylococci in certain glands which suppurated, and Comby also speaks of cases in which suppuration occurred. All other writers, however, comment on the absence of suppuration as a characteristic of the disease. The constant presence of obstinate constipation led v. Starck to advance the theory that the general symptoms and the adenitis might be due to infection derived from the intestines, or to the absorption of a toxin from the retained fæces. Dr. Henry Koplik, in the discussion at the New York Academy of Medicine, suggested that the earlier affection of the glands of the left side of the neck, which has struck most of those who have published notes on the disease, might be due to passage of the infective agent from the thoracic duct to the glands on the same side. On the whole, however, it seems probable that the infective agent, whatever it may be, obtains entrance by the pharynx or tonsils without producing a local lesion there, as is sometimes the case with the bacillus tuberculosis.

The condition presents certain analogies to the "non-venereal bubo," which has recently attracted a good deal of attention in the Far East, and has been the source of not a little perplexity to the medical officers of the army and navy. In connection with the theory that the glandular fever of childhood is due to intestinal infection and toxæmia, it is interesting to note that Surgeon-Major Skinner has suggested that as the "non-venereal buboes" in the cases he observed invariably occurred in the inguinal glands, and as the patients always had irregular action of the bowels, and sometimes dysentery, and in others apparently constipation, the enlargement of the inguinal glands may be due to secondary infection from the mesenteric lymph glands.

Though the pathology of glandular fever is unknown, it is of practical consequence to recognize that children are liable to an affection such as is described; that it is communicable, and that, though acute and accompanied often, if not usually, by high

temperature, it is almost invariably benign, and does not lead to suppuration of the affected glands; but that it leaves behind it marked anæmia and general deterioration of health from which the child does not completely recover for a month or two.

There is one other point in which the affection resembles a specific fever. Treatment does not apparently exercise any influence over the course or duration of the malady. A cold compress to the neck, or, in the more severe cases, belladonna fomentations, relieve the local symptoms but do not prevent the onset of adenitis on the opposite side. The bowels respond readily to laxatives, but the constipation soon returns. Purgatives, such as calomel, do not produce any more permanent effect, and Dr. Park West states that in some of the cases in which resort was had to this practice it seemed to be responsible for greater depression and a more prolonged convalescence.

**Sendziok: Follicular Tonsillitis and Its Relation to Diphtheria.** (*Archives f. Kinderheilkunde.* B. xx., H. v., vi.)

The author observed 133 cases of lacunar tonsillitis. The patients were about equally divided between the two sexes. The majority were between twenty and thirty years of age. Five epidemics came personally under the author's care. He believes the disease to be infectious beyond a doubt. Most of the cases developed during fall and spring. Hypertrophy of the tonsils predisposes to an acute attack. The Klebs-Loeffler bacillus was never found. Staphylococcus and streptococci were always present. The course in all was typically acute.

Laryngitis and bronchitis were frequent complications. Two cases developed tonsillar abscess. Severe cases may be differentiated positively by bacteriological examination only.

Nothing new is suggested in the management.

**Claser: The Significance of Diphtheria Bacilli in Individuals Apparently Healthy.** (*Archives f. Kinderheilkunde,* B. xx., H. v., vi.)

An epidemic of diphtheria broke out among the soldiers in the barracks at Christiania. In spite of the strictest quarantine and the most painstaking disinfection, the epidemic continued to spread.

Cultures were then made from the throats of eighty-nine sol-

diers who were apparently well. Of those, seventeen (or nineteen per cent.) showed the presence of virulent diphtheritic bacilli. These seventeen developed diphtheria. In four no exudation was seen at any time, but that the bacilli produced toxins was proven by the post-diphtheritic paralysis which followed.

Twenty-five days after the disappearance of membrane, a child was sent to her home. The throat looked perfectly normal. Bacteriological examination showed the presence of a few diphtheria bacilli. This child infected her two sisters.

After an exposure to diphtheria in a scarlet fever pavilion, nine of twenty-five children showed the presence of the bacilli in healthy throats. These were immunized with antitoxin; one only developed diphtheria, and this case was mild.

**Friend, Samuel H.:** *The Etiology of Rickets.* (*University Medical Magazine.* 1896. Vol. viii., No. 1.)

From observation and experiments of Sutton, Korsakow, the clinical studies of Wegner, Friese, Jacobi, Montmolli, Hartwitz, Hochsinger, Freer, Snow, Forchheimer, and the author's own experience, the causes of rickets appear to group themselves in harmony with the following classification:

(1) Suckled immediately and continuously under normal shelter, clothing, atmosphere, and light; under abnormal or deficient shelter and clothing, contaminated atmosphere, and modified light; either a predominance of one or more of these conditions.

(2) Suckled immediately, but discontinued within one or several months under normal shelter, clothing, atmosphere, and light; under abnormal or deficient shelter and clothing, contaminated atmosphere, and modified light; either a predominance of one or more of these conditions.

(3) Hand-fed immediately and continuously under normal or deficient shelter, clothing, atmosphere, and light; under abnormal shelter, clothing, contaminated atmosphere, modified light; either a predominance of one or more of these conditions.

(4) Diseases occurring in the mother during or previous to gestation, modifying special structure of foetus or gaseous liquid and solid food to the foetus.

Analyzing this classification in its order, the following considerations are apparent: Some women suckle their children immediately and continuously after birth, who absorb normal or



abnormal food stuffs under normal environment, whose normal secretions and excretions are inhibited either by excessive physical function, domestic difficulties, antagonism to suckling or to the discipline to suckle the child. Again, some persist in doing it where the nourishment is abnormal in quality, owing to anatomical insufficiency of vascular and mammary development or other acute or chronic pathological conditions inhibiting the secretion of milk.

Those suckled under abnormal environment are also prone to the disease where adequate evidence of faulty absorption of milk cannot be found, consequently there must be a predominance of one or more of the abnormal external environments. In the second and third classification all statistics give ample evidence that the causes exist in the inadequate absorption of the semi-liquids in the former case, and in the combination of both semi-liquids and external environment in the latter case.

In the fourth classification, the evidence of statistics indicates that syphilis especially predisposes to the uterine and congenital form through the modification of certain structures, or the production of abnormal gaseous, liquid, and solid food stuffs to the foetus.

**Sevestre et Mery: The Continuation of the Bacilli in the Throat After Diphtheria.** (*Archives f. Kinderheilkunde.* B. xx., H. iii., iv.)

After extensive observations the author makes the following statements:

The treatment, whether local and antiseptic, or with serum, has an influence upon the presence of the bacilli in the throat after the attack. In a certain number of cases the bacilli disappear with the membrane, or they remain a longer or shorter time, but lose their virulence. The favorable cases comprise perhaps from one-half to two-thirds of the cases.

In another variety, less numerous than the foregoing, virulent bacilli are to be found in the throat and nose long after the patient is well. Irrigation of the nose and throat is then not only indicated during the height of the disease, but after the throat is clear. The Loeffler bacillus was found in the throat a month after the membrane disappeared. In the nose it is often found after a longer period than this. There is no indication of



its presence in the throat. From the nose there is sometimes a discharge which is non-specific in character.

As long as the bacilli are present, the person may infect others. The patients should therefore be kept in quarantine until the throat has been found free after repeated examinations.

**Ghika: Toxic Diphtheria, Hemorrhagic Form, Death.**  
(*Journal de Clin. et de Thérap. Infantiles.* Vol. iv., No. 27.)

The case is that of a five-year-old girl, who entered the Trousseau Hospital in very bad condition, after an illness of eight days. Swelling of the neck was very marked, especially on the right side, where the skin was reddened, and a hard, indolent œdema present. The entire throat seemed filled with false membranes, beneath which the pharyngeal wall was intensely reddened. There was great prostration, which increased in spite of serum injections. Two days later there developed hemorrhages from the mouth and nose, and pulmonary infarctions. Complete anuria persisted twenty-four hours before death. The temperature was not elevated during the three days of observation.

At the autopsy the multiplicity of visceral hemorrhages was very striking. The pharyngeal walls and surrounding cellular tissue were infiltrated with blood, while the lungs showed large infarctions and extensive hemorrhages; there were sub-pericardial and endocardial ecchymoses. All lymph nodes were large, many infiltrated with blood. Congenital hydro-nephrosis existed on the right side, with diffuse nephritis of the left kidney. It is very rare, indeed, to find such generalized hemorrhagic effusions during life.

**Hutinel: Cystitis Due to the Colon Bacillus in Children.**  
(*Rev. Internal de Méd. et de Chir.* Vol. vii., No. 23.)

All the cases of this kind which Hutinel has seen have been in little girls who had a neglected vulvo-vaginitis, then an accidentally produced intestinal infection, and finally the cystitis developed. Consequently the clinical picture comprises the symptoms of all three. The cystitis usually begins with irregular fever (38°-40° C.), and the local signs soon become marked, comprising frequent, painful micturition, often followed by a few drops of blood; the urine contains albumen, an abundant deposit of muco-pus, and microscopically epithelial cells, pus cells, and

bacteria in large numbers. The last can easily be cultivated, and proven to be the bacillus coli communis.

While the prognosis is usually not grave, relapses are quite frequent, and the bacilli often remain in the bladder a long time. A pyelo-nephritis has been reported by Guyon as a complication.

It is probable that the bacteria enter through the urethra; and, in some cases, that they travel directly through the rectal wall into the bladder.

**Miller, George R.:** **A Case of Infantile Scorbutus.** (*New York Medical Journal.* 1895. Vol. lxii., No. 25.)

The patient was a boy of nine months, who had been fed exclusively on a proprietary food without milk, upon which he had apparently thrived. When seen by the writer, the legs below the knees were swollen, and his expression was painful and anxious. He lay upon his back with the legs partially flexed. He was plump and well nourished. Salicylate of sodium was administered, but the swelling and tenderness increased. The gums became purple and inflamed, and bled readily. They soon began to slough, and the breath became offensive. Several purpuric spots were discovered. Fresh cow's milk, and beef juice, and pieces of orange were administered. Improvement began at once, and the change in the child after three or four weeks was marvelous.

**Shaw, Charles S.:** **Rickets.** (*Medical and Surgical Reporter.* Vol. lxxiii., No. 9.)

The geographical distribution of rickets is not its least interesting feature. It is practically unknown in tropical countries, and is a disease peculiar to the Northern temperate zone. But it also has racial preferences. Kassovitz is authority for the statement that eighty per cent. of the children of Vienna are rachitic. It is also very common in northern Italy, France, Germany, Russia, and Great Britain; but, singularly, it is rare among the Irish. It is rare, too, in Australia, and essentially absent in China and Japan. The American negro is very subject to rickets—it may be said that every northern negro child is more or less rachitic. On the other hand, the native African does not suffer from the disease.

Presuming the cause of rickets to be mal-nutrition, the indi-

cations for both its prevention and its cure are evident. Pure air, cleanliness, and especially proper food, are essential. Most cases are due to defective diet, and the defect is usually a lack of fat in the food. If the child is nursed at the breast, the mother's milk will be found to be lacking in fatty elements; if it is artificially fed, the same want will be demonstrable.

Of medicinal agents, cod-liver oil holds the first place. When it cannot be borne by the stomach, it may be used by inunction with the utmost satisfaction. Indeed, the rubbing and massage incident to this use of the oil is of distinct value. Olive oil or cocoa butter may be substituted for the cod-liver oil in inunction, and in his experience these have been equally of value. Kassovitz claims a specific power for phosphorus, which he gives in doses of 1-125th of a grain dissolved in olive oil.

The correction of deformities in after life is often feasible by operative measures, but these should be deferred as long as possible, for there is a constant tendency during growth towards natural correction.

**Straight, Howard S. : A Case of Headache Due to Adenoid Growths.** (*Medical News.* 1896. Vol. lxxvii., No. 19.)

The patient was a boy aged sixteen years. He had suffered from headache for three years. He was healthy, and had never been seriously sick. Nothing in his general condition accounted for his headache. His eyes caused no trouble. He said that he had some catarrh of the nose. His complaint as to his nasal catarrh was in no way unusual. For three years he had suffered severely from headache. As a rule, on rising, his head would ache so much that he could not eat any breakfast, and often he would vomit. The headache would continue until about the middle of the forenoon, and then would gradually subside; by noon it would disappear. About once a week he would have a headache so severe that he would have to go to bed and remain for some hours. An examination of his upper air-passages revealed adenoid growths. There was no other abnormal condition present. A removal of the adenoid growths was advised, and no promise was made as to possible relief of the headaches by this operation. The growths were scraped out with a Gottstein curet, after painting the soft palate and pharynx with a twenty per cent. solution of cocain. After removal of the adenoids, the headaches ceased at once, and have never returned. A



recent letter of inquiry as to his present condition was answered in accord with the foregoing statement.

Although this boy had had these growths for a long time, and there was good reason to suppose that they had previously been larger than when removed, he had suffered from headache only during the last three years. At the time of the first occurrence of the headaches, the patient was in good health.

## HYGIENE AND THERAPEUTICS.

**Parker, W. Rushton :** *Sporadic Cretinism and Its Treatment.* (*British Medical Journal.* 1896. No. 1863.)

Dr. Parker exhibited by the aid of a lantern about sixty photographs of cretins. About forty of these represented two different views of as many cretins, one before and one after treatment with thyroid extract. The cretins varied from one day to thirty-six years of age, and about sixty per cent. of these (and of fifty other cases collected) were female. The same remarkable results were seen in most of the pictures exhibited, namely:

1. A great and rapid diminution of bulk, due to absorption of myxœdematous deposits, seen especially in the collapse of the protruding abdomen; in the spontaneous reduction of umbilical herniæ; in the recession of the previously swollen tongue behind the teeth; in the disappearance of baggy swellings under the chin, above the collar bones, outside the nipples, and elsewhere; in the thinning of the lips; and in the disappearance of the dropsy-like puffiness of the face, limbs, and other parts of the body.

2. A great and rapid increase in physical development, shown especially by a rapid growth of several inches in height, even in cretins of from twenty to thirty years of age, whose stature had been nearly or quite stationary for many years previously; also by the replacement of the coarse sparse hair by a more abundant and finer growth; by the eruption in quick succession of teeth which had been long overdue, as in cases where the milk teeth still persisted at twenty years of age; and by a substantial increase of body weight, after the initial loss from absorption of myxœdematous deposits.

3. A striking diminution of several hideous deformities, especially of the lordosis in the lumbar spine, of the bulky head, of the ugly sinking of the bridge of the nose, and sometimes of the



rickety curvatures of the legs. Many of the pictures, however, showed little or no improvement in the deformity of the legs, owing to the softening of bones produced by thyroid extract, and to the fact that the majority of cretins were allowed an undue use of their legs during treatment.

4. A rapid and very striking increase of intelligence occurred, as was well seen by comparing the dull, stupid, heavy, listless, often idiotic countenance before treatment, with the bright, cheerful, pleasing expression which soon took its place.

It was stated that no other disease existed the treatment of which lent itself so admirably to photographic display, and that the treatment of cretinism by thyroid extract was one of the greatest triumphs of modern therapeutics.

Dr. Parker added that there appeared to be at least three pathological varieties of cretinism. The first variety is embryological, due to non-development or partial development of the thyroid body, and analogous to any other malformation from deficiency, such as absence or arrested development of uterus, ovaries, testicles, etc., acardia, acephalism, anencephalism, etc. A second variety is due to atrophy of the thyroid parenchyma, occurring occasionally after some serious illness in childhood, and analogous to the atrophy of the testicles after mumps. A third variety is due to goitrous degeneration of the thyroid body. Though the etiology and pathology of these varieties are quite distinct, the symptoms appear to be identical, and to be due solely to the degree to which the function of the thyroid body is lost, and the youthfulness of the patient in whom the loss of function occurs.

**Koester, G.: Treatment of Enuresis.** (*Deutsche Medic. Wochenschr.*, 1896, xxii., 364; *The Canada Lancet*, 1897, Vol. xxix., No. 6.)

G. Koester has revived the electrical treatment of enuresis, first recommended by Seeligmuller in 1867, and obtained very satisfactory results. After the patient has emptied his bladder, he lies down on a sofa at full length. The anode of a faradic battery, armed with a medium-sized round electrode, is placed on the abdomen, just over the region of the bladder, while the cathode wire, after having been thoroughly disinfected with a five per cent. solution of carbolic acid, is inserted into the

urethra for 1 to 1.5 cm., and thus held. Allow the current to pass, and gradually increase its strength as high as the patient can bear with comfort. Continue for two to three minutes, then gradually weaken the current to its lowest power, where it is allowed to remain for one minute. After this procedure has been repeated three times the seance is ended. Frequently this one treatment is sufficient for a cure. It is better, however, to repeat it a few times during the following three or four days. Whenever the patient has soiled either the bed or his clothing with urine, an application of the current should be made the following day, and only when no enuresis has occurred for a number of days in succession should the treatment be discontinued. He has treated twenty cases (eleven boys and nine girls). Of these there were eleven cases of enuresis nocturna et diurna, of which nine were cured and one was improved; and nine cases of enuresis nocturna, of which eight were cured. The average number of treatments was two.

He believes the cause of enuresis to be a weakness of the closing muscles of the bladder, the sphincter vesica and compressor urethra. The irritation produced by the cathode influences these muscles reflexly, hence the success of the method. Even in cases accompanied by obstruction to nasal respiration, or adhesions between the glans and foreskin, and in orthophimosis, the result was satisfactory, which goes to prove that an accompanying weakening of the sphincters must at least have existed. The strengthened sphincters were able to resist the reflexly irritated detrusors. Another case, in which the reflex irritation producing evacuation of the urine had been removed by the curing of a phimosis of two years' standing, still suffered from enuresis, until cured by the electrical treatment. This case also corroborated the fact insisted on by Henoch, that enuresis may follow the infectious diseases, for the boy remained cured until he had an attack of measles, when a relapse occurred. From taking cold, and through psychic excitement, the sphincters of the bladder may experience a temporary weakness. General debility is not a very important factor as a predisposing cause, it being only present in seven out of the twenty cases, the rest having a strong and even robust constitution. In one case heredity seemed to have had some influence, as the father suffered from enuresis up to puberty, and a brother is still subject to it.

**Hock: Creosote in the Treatment of Children.** (*Wien. Med. Blätter; Medical News*, 1897, Vol. lxx., No. 6.)

The author has had brilliant results from the use of creosote in treatment of children, not only in phthisis, but in the sequelæ of whooping cough and the catarrh which so often follows measles. These two conditions, as is well-known, furnish a favorable opportunity for tuberculous infection. The usual treatment with expectorants is too often without result. Most diseases of childhood are accompanied by disturbances of digestion, and these are the symptoms which are first relieved by the use of creosote. The appetite improves, the abdominal pain disappears, and weight increases. Later the pulmonary condition improves. It goes without saying that the creosote must be given in such a manner as not to upset the stomach, and large doses in a concentrated form are therefore to be avoided, the drug being given in small doses with meals. Pills, though cheap, are objectionable, especially for very young children. Hock tried in a number of instances to administer fluid creosote with tincture of gentian, but in almost every case the stomach refused the medicine after a few days. He was most successful with a one to two per cent. solution of creosote in cod-liver oil, to which one-twentieth of one per cent. of sugar was added. The dose of this mixture is from one-half a dram to one-half an ounce, three times daily, according to the age of the patient.

**Pearson, R. A.: Facts About Milk.** (*Farmer's Bulletin*, United States Department of Agriculture. No. 42.)

This little pamphlet contains much valuable information regarding milk and its production. The following subjects are considered: Difficulties of obtaining pure milk; changes of milk by adulteration and preservatives; care of milk and cream; detection of impure milk by numerous methods; town and city milk supplies.



## SURGERY.

**Northrup, W. P.: Intussusception in a Child Seven Months Old; High Injections; Recovery.** (*Medical News.* 1896. Vol. lxi., No. 24.)

The author reports a most instructive case of intussusception occurring in a patient of Dr. L. K. Neff. The child, seven months old, was seized with an attack resembling colic. Upon the first examination a sausage-shaped tumor was found lying along the margin of the liver. On the following afternoon the same sausage-shaped tumor could be felt in the right hypochondrium. It was easily felt, and was three inches by three-fourths of an inch in size. The tumor began deep in the right flank, the left extremity being at about the median line. It was possible to explore the deep extremity with the end of the finger, and to feel a sharp shoulder.

The child tolerated examination very well; it lay in a stupor, relaxed as though under an anæsthetic. No amount of manipulation caused change of countenance. The abdomen was flabby; the "sausage" could be mapped out and rolled about. Physical examination otherwise disclosed no abnormality; no digital exploration of the rectum seemed indicated, and, on account of the age of the child, none was made.

The diagnosis of intussusception was agreed upon. As yet there had been no passage from the bowels later than two normal movements, in the morning, before the occurrence of the first symptoms. The vomiting at first followed the giving of fennel tea and brandy, though it may be added it also occurred twice in the night. The symptoms thus far were two—pain and tumor. There was also a notable pallor, and a notable relaxation, though these are not urged as characteristic of the obstruction.

Gentle irrigation brought away free blood. High injection was practised with water at a temperature of 110° F. and a pressure of five feet; a soft catheter was passed three to five inches within the sphincter, no effort being made to pass it further. The hips were elevated, and the buttocks compressed about the rectal tube. No anæsthetic was required; the baby continued drowsy, relaxed, pale, and seemingly already anæsthetic. As the water slowly crept from the splenic flexure toward the sausage-shaped tumor, accumulating behind the constriction, it formed



a tumor to the right of the median line—a tumor easily felt and seen. This tumor, while under observation, the pressure continuing, traveled slowly to the right, and under the hand seemed all at once, with a gurgle, to flatten out and disappear. The condition of the child remained unchanged. No further evidence of tumor being present, the child was returned to the medical ward for further observation.

On the following day the evidence of the tumor was doubtful, but it could not be stated with certainty that a tumor was not present. On the second day in the hospital, the general condition was less favorable; abdomen was rigid. The child was somewhat disturbed, and stupor, relaxation and pallor were more marked; temperature reached  $103^{\circ}$  F.; pulse, 142. This was forty-eight hours from the first appearance of symptoms. Indications for prompt relief were pronounced. Dr. McCosh supervising, injections were administered as before, under continuous, prolonged, gentle pressure. Again a cutting operation was meditated if injection did not promptly relieve. The condition of the child at this moment brought out the opinion from some present that injections were unsafe, and that abdominal section offered better promise. The medical men present favored the view of Dr. McCosh, that injections, conducted with the cautions observed in the former attempt at reduction, were justifiable and preferable.

The second injection left the abdomen as before, full of water, with no definite evidence of the condition of the intussusception. The pressure was rather less than five feet, and was held rather longer than the first; till, in fact, the entire abdomen was apparently filled. The child was now allowed absolute quiet for six hours. At the expiration of this time the surgeons and physicians were again to meet and consider the necessity of an immediate abdominal section—in case the second injection failed.

At the appointed hour the meeting took place in the operating-room. So little confidence had we in the second injection undoing the tight obstruction after the failure of the first, that we did not go to the medical ward, but sent for the nurse and child. The nurse appeared, but without the baby, and reported. Her report was embodied in the contents of a napkin—a movement from the bowels containing, besides mucus, much good

normal fecal matter—evidence that the intussusception was reduced.

That night the baby slept well and nursed at regular intervals, and in the morning was sent home with its mother, cured. It has remained perfectly well ever since—now six months.

**Variot: Indications for Operative Interference in Croup.**  
(*Journal de Clin. et de Thérap. Infantiles*. Vol. iv., No. 39.)

By using steam inhalations as an adjuvant to serum-therapy in croup, Variot has found it possible to reduce the number of cases requiring intubation or tracheotomy to fourteen per cent. Sevestre has arrived at the same conclusion, advising late operation, thus giving the serum time to loosen the laryngo-tracheal membranes and quiet the spasm of the glottis. Whenever possible, it is far preferable to cure croup without other treatment than serum injections, for even intubation, while preferable to tracheotomy in children under two, has its very serious inconveniences which can only be obviated by constant watchfulness. Tracheotomy places the patient in danger of immediate accidents (surgical), and of early or late broncho-pneumonia.

However, the question of intervention in croup must be controlled by a precise knowledge of the physiological mechanism of laryngeal obstruction and asphyxia. It is not the quantity of membrane present which prevents the entrance of air into the respiratory passages—that is, the most membranous diphtheria cases are not always the most suffocating or spasmodic. It is undoubtedly the spasm of the glottis, associated with laryngeal diphtheria, which constitutes the great danger of asphyxia in croup, and here the intubation tube may act as a dilator as well as an air passage. Infants under two seem to be subject to more severe spasm of this kind than older children, while rachitic and nervous children are also affected by a more severe type. Croup, complicating a pre-existing broncho-pneumonia, requires interference almost invariably.

However, it is rare to have a first attack of suffocation so severe as to make intubation indispensable, and it should only be resorted to when the attacks are very frequent and the patient remains livid and with dyspnœa in the intervals.

Every case of diphtheria with laryngeal symptoms should be carefully watched, and the instruments for intubation or tracheotomy should be kept ready for immediate use if required.

Naturally, where close observation is not possible (in the country), it is better to operate prematurely than to find the patient dead at the next visit.

**Marron y Alonzo: Craniotomy in Microcephaly.** (*Archives de Neurologie.* Vol. ii., No. 8.)

The author is convinced of the utility of the operation in spite of the fact that statistics show twenty per cent. of deaths, and a minimum of improved cases resulting from it. He thinks that the operable cases must be very carefully chosen from among the etiologically and anatomically different varieties of microcephaly. Thus the operation is superfluous where the brain is primarily small, arrested in development, and consequently covered by a small cranium. But where there is premature ossification of the sutures, with a brain capable of a certain amount of development, the operation is plausible, at least when the general condition of the child is favorable.

A case is reported in a nine months old boy, of neurotic family, whose head, at birth, showed no fontanelles. When three months old, epileptiform seizures began, and became very frequent; the child was stupid, did not recognize his mother, nor utter a sound; there was no paresis. Linear craniotomy was performed on the right side, a piece of bone, parallel to the sagittal suture, being removed. Owing to an accident with the chloroform anæsthesia, the baby died thirty hours after the operation.

**Leguen and Marien: Tuberculosis of the Parotid.** (*Review in L'Union Méd. du Canada.* Vol. i., No. 9.)

The case is that of a girl thirteen years old, who presented a tumor as large as a nut on the left jaw, at the anterior border of the masseter muscle, over which it was freely movable, but was adherent to the deeper layers of the skin. The growth has been going on for three years, and was soft and indolent. On removal, a salivary fistula remained for a short time and then closed.

Examination proved the tumor to consist of inflamed parotid tissue containing a tuberculous cavity, and tubercle bacilli. The infection did not take place through the skin, lymphatics nor blood vessels, but through the excretory ducts of the gland itself.



# AMERICAN PEDIATRIC SOCIETY.

## NINTH ANNUAL MEETING.

Washington, May 4th, 5th, and 6th, 1897.

### OFFICERS.

<i>President,</i>	-	-	-	SAMUEL S. ADAMS, M.D.
<i>First Vice-President,</i>	-	-	-	W. S. CHRISTOPHER, M.D.
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Dr. William Osler has been detailed by the American Pediatric Society to take part in the discussion on *Internal Secretions* at the Congress of American Physicians and Surgeons in Washington, on May 5th, and is anxious to present the experience of American physicians on the use of the thyroid extract in the treatment of cretinism. He wishes brief statements, (1) of the name, age, and sex of the patients; (2) of the length of time the thyroid extract has been given, and with what results; (3) whether any case cured by treatment has been able subsequently to abandon the use of the extract. He would also like to have photographs showing the effects of the treatment. Full credit will, of course, be given for any information that may be received.

In addition to the papers announced in March, the following have been offered:

22. A Case of Exophthalmic Goitre Apparently Cured by the Use of Thyroid Extract. CHARLES GILMORE KERLEY, M.D.
23. Thyroid Therapy. HENRY KOPLIK, M.D.
24. Exhibition of Apparatus for Clinical Diagnosis. HENRY KOPLIK, M.D.
25. Two Cases of Meningitis, Apparently Tuberculous, With Recovery. GEORGE N. ACKER, M.D.

The Committee on the Collective Investigation of the Antitoxin Treatment of Laryngeal Diphtheria announces that the date for accepting reports has been extended to April 10th, to admit any cases that may be running on April 1st.



# ARCHIVES OF PEDIATRICS.

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## Original Communications.

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### STRANGULATED HERNIA IN INFANTS UNDER ONE YEAR OF AGE, WITH THE REPORT OF A SUCCESSFUL OPERATION.\*

BY CHAS. N. DOWD, M.D.,

Attending Surgeon, New York Cancer Hospital; Assistant Surgeon, St. Mary's Hospital for Children, New York.

On January 15th, through the courtesy of Drs. Walter Mendelson and Henry C. Coe, I was called to see an infant of four months, suffering from strangulated right oblique inguinal hernia.

The child had been carefully examined for hernia after birth, according to the regular custom of the accoucheur, and none had existed nor had any become evident before the day of operation. The strangulation had existed for six hours, and the effort to reduce it by taxis had already been carefully made under ether. The hernia was as large as a goose egg, and was very tense. The baby was a healthy boy, and in spite of his small size, immediate operation seemed to be indicated. This was done by the method of Bassini, chromocized gut being used for the deep sutures, and alcohol catgut for the other sutures and the ligation of the sac. The sterilized dressing was held in place by a plaster spica which extended from the ribs to the ankle, and this in turn was protected from urine by gutta percha tissue.

The interesting feature of the operation was the excellent way in which the baby endured the ordeal. He had already had ether for the taxis, and for the operation itself it had to be given for nearly an hour. This rather long duration of the operation was necessary because the tissues

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\* Read before the Surgical Section of the New York Academy of Medicine, March 8, 1897.

could not be separated with the usual facility, owing to the tension and their small size and softness, and to the fact that particular care was used to avoid injuring the delicate intestine of so small a child. Yet the baby showed no evidence of shock, his pulse was good throughout, and he came out of the ether well, and passed a far better night than most adults do after ether, nor did he show any marked reaction from the operation. The temperature rose to  $101^{\circ}$  by the rectum, on the following day, and then returned to normal at once, and remained there. He took his milk as usual, and cried no more than he had been accustomed to. He seemed happy and good-natured, and apparently did not find the plaster dressing particularly uncomfortable. The dressing was changed every four or five days for three weeks. On pleasant days he was taken out in his carriage, and he lived and acted very much as he had been accustomed to before the operation. Healing took place by primary union. At the present time that side of the abdomen is as firm and solid as the other.

Strangulated hernia in infants is very rare, and there are many difficulties in obtaining exact data on the subject, as infants are not commonly treated in hospitals; and isolated cases in general practice would not be likely to be reported unless there was something of peculiar interest about them. Several good monographs have, however, been written on the subject, among which may be mentioned those of Marsh,\* Knobloch,† Stern‡ and Tariel.¶ In order to estimate the rarity of the condition Stern found that among 1,404 operations for strangulated hernia, only thirteen occurred in children under four years of age.

When an infant is seen with strangulated hernia, there are two questions which at once present themselves:

1. To what extent should taxis be tried?
2. What is the prospect of relief by operation?

In answer to the first, I believe it is fair to say that the consensus of opinion is that one effort at taxis should be made with the child in a hot bath and his legs elevated. If this is unavailing, preparations should be made for operation, which should be at once done in case the hernia is not reduced by gentle pres-

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\* Marsh. St. Barthol. Hosp. Reports. Vol. x., 1874.

† Knobloch. Inaug. Des. Breslau. 1890.

‡ Stern. Centralblatt für Chir. 1894.

¶ Tariel. De la Hernie Inguinale Etranglée Chez l'Enfant. Paris, 1894

sure after the anæsthetic is given. In any case the efforts at taxis should be very gentle as they are not free from danger.

Several cases are reported in which injury has been done by taxis, among which one may be mentioned which Ashby and Wright\* record, where death resulted from injury to a coil of intestine which was reduced by taxis. The following case, which is recorded by Paget, shows some of the dangers which the method of taxis may give. A boy of three months was seen with a large tense scrotal hernia which was accompanied by inflammation of the scrotum. This was reduced by taxis under chloroform, and for eleven days he did well, taking a quart of milk daily, and having regular and free movements of the bowels. Then the symptoms of inflammation reappeared, and two days later another attempt was made at reduction under ether, but perforation occurred, an artificial anus was made, and the termination was fatal.

Taxis clearly should only be persisted in when the danger from taxis is less than the danger from operation. The danger of taxis increases with the duration of strangulation. Even if the taxis is successful, we have the fear of a recurrence of the strangulation.

Operation of itself presents very little danger. The danger mostly comes from injury to the intestine, caused by long continued strangulation. Stern, after deducting the cases whose death was not due to operation, estimated the mortality since the beginning of the antiseptic era as  $13\frac{9}{10}$  per cent. in children under four years of age. Without making any deductions, the mortality was  $21\frac{3}{10}$  per cent., while that for 733 adults was  $18\frac{9}{10}$  per cent. So far as these statistics are a guide, they certainly indicate that children under four years of age are about as good subjects for herniotomy as the adults, strong and weak, who have been operated upon for strangulated hernia.

But we are particularly interested in infants under *one* year of age. Stern records thirty-one such cases, Taniel twenty-six and Knobloch ten additional ones, who have been operated upon for strangulated hernia since 1874—the beginning of the antiseptic era. In addition to these I have found records of fifteen other cases, which have occurred since the publication of their articles, and which are tabulated below. This makes a total of eighty-

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\* The Diseases of Children, p 149.

# RECENT CASES OF STRANGULATED HERNIA IN INFANTS LESS THAN A YEAR OLD.

No.	OPERATORS.	AGE OF CHILD.	VARIETY OF HERNIA.	CONTENTS.	DURATION OF STRANGULATION.	METHOD OF OPERATION.	RESULT.	REMARKS.
1.	E. Evans, Archiv. Ped., Sept., 1894.	18 days.	Right Inguinal.	Cæcum, Appendix, several inches of ileum	57 hours.	Constriction divided, sac opened, 4 deep silk sutures.	R.	
2.	F. T. Lamkin, Brit. Med. J., 1895, II., 658.	16 days.	Right Inguinal.	Intestine.	24 hours.	Herniotomy. Cutting of constriction.	R.	
3.	B. Paget, The Clin. Jour., London, Oct. 10, 1894.	3½ mos.	Right Inguinal.	Bowels.	Few hours.	Herniotomy. Sac not tied.	R.	
4.	Haveman, Deutsch. Med. Woch., 1894, p. 679.	4 weeks.	Right Inguinal.	Small Intestine.	3½ days.	Ring sutured.	R.	
5.	C. F. Adams, Med. Record, Nov. 28, 1896.	2 mos.	Inguinal.	Cæcum, Appendix.	About 24 hours.	Ring cut sutured.	R.	
6.	Coley, Annals of Surgery, April, 1895. Case 30.	8 mos.	Right oblique Inguinal.	?	24 hours.	Czerny.	R.	
7.	Ibid. Case 67.	7½ mos.		Cæcum, Appendix.	24 hours.	Bassini.	R.	Marantic child—died a few weeks after operation.
8.	Ibid. Case 164.	5 mos.	?	?	2½ days.	Bassini.	R.	
9.	Ibid. Not numbered.	8 weeks.			Patent almost moribund.	No attempt at radical cure.		
10.	Müller, Hosp. T. d. Kjobruch, 1894, 4 R. II., 393.	45 days.	Inguinal.	?		Sac ligated and wall sutured.	R.	Retention of urine.
11.	Prior, Hosp. Tid. Kjobuch, 1894, 4 R. II., 261.	7 weeks.	Right Inguinal.				R.	
12.	Boodle, Aust., Med. Gaz., July 15, 1894.	6 weeks.	Right Inguinal.	Cæcum.	2 days.		R.	
13.	Parsons, Med. Times and Register, 1896, Vol. 32, p. 415.	Young Infant.	Inguinal.				R.	
14.	Curtis, reported at Sur. Sec. N. Y. Acad. Med. Mar. 8, '97.	4 weeks.	Right Inguinal.	Small Intestine.	24 hours.	Incision of ring without returning Intestine.	D.	
15.	Dowd, case reported in this article.	4 mos.	Right Inguinal.	Small Intestine.	6 hours.	Bassini.	R.	



two cases. Among these there have been seventeen fatal ones, or  $20\frac{7}{10}$  per cent., which does not differ materially from the percentage in the 733 operations in adults above referred to.

But several of these cases ought properly to be deducted. We learn more about the real dangers of the condition by studying these seventeen cases somewhat in detail:

1. In Steinbach's case, the strangulation had existed for four and one-fourth days, during which time repeated attempts at taxis were made.

2. In Tariel's case, strangulation had endured six days; the child had fæcal vomiting, and died in collapse.

3. In Féré's case, strangulation existed two days, during which repeated attempts at taxis were made. The child was in collapse when the operation was done, and upon autopsy a perforation of the intestine was found.

4. In Coley's case, the child was almost moribund at the time of operation, so that no attempt at radical cure was made.

5. In Curtis' case, there was gangrene of the intestine.

6. In Socin's case, there was gangrene of the intestine in a child three weeks old.

7. In Paget's case, there was gangrene of the intestine.

8. In Wahl's case, the ulcers of typhoid fever were found in the intestine upon autopsy.

9. In Shede's case, there was a phlegmon about the operation wound fourteen days after the operation. No peritonitis.

10. Czerny's case died of sepsis.

11. Leistrink's case died of diarrhœa on the second day.

12. Paget's case, an ill-nourished child of three months, who was brought to the hospital and suffered much exposure, and whose strangulation had existed one day, died on the fourth day of acute bronchitis.

13. Stern's case died of intestinal obstruction.

14. Haenel's of pneumonia.

15. Frusci's case died of erysipelas.

16. Salnelle's was a child of nineteen days, in whom strangulation had existed two days. An inflamed fallopian tube was in the sac.

17. In Vergely's case, strangulation had existed three days, and there was perforation of the intestine.

Thus we see that in hardly any of these fatal cases was operation done promptly. In nine of them there was gan-

grene of the intestine, a condition of collapse, faecal vomiting, or typhoid fever, at time of operation. We find repeatedly that operation was delayed on account of the tender age of the infant, and that attempts at taxis were made, one after another, until the conditions were most unfavorable for operation.

One cannot judge closely of conditions by the meagre histories given, but so far as we may judge, the mortality of strangulated hernia in children under one year of age would be considerably less than 10 per cent. if the operation were promptly done by surgeons who have had only the average experience. And there is no other method of dealing with the condition which gives promise of results which are nearly as good.

Delay and repeated attempts at taxis are far more dangerous than operation. The thin intestines quickly become gangrenous when strangulated, and are easily injured by taxis. And observers generally concede that the symptoms of shock and collapse follow more quickly after strangulation in the infant than in the adult.

On the other hand, these infants stand operation remarkably well. Their recuperative powers are good, and their wounds are less apt to become septic than those of adults. The magnificent recuperative power which an infant may show is illustrated by the following case, which is quoted from the *London Clinical Journal*. The operation was for strangulated inguinal hernia of a few hours' duration in a boy of three and one-half months. The sac was not ligated. A week after operation the stitches in the wound gave way, and eighteen inches of intestine were found protruding from the wound under the dressing. This was pushed back, and the wound resutured. It gave way again, however, and had to be sutured again, but the ultimate result was recovery. If an infant of three and one-half months can withstand three operations, the protrusion of eighteen inches of intestine through a granulating wound under a dressing, and weeks of confinement and treatment, we must have a great respect for his recuperative power.

A word about the technique of operation. In some instances the constriction has been divided, but not again sewed together. In some, dissection has been made down to the strangulated intestine, and the tissues outside of this cut on a grooved director, or by a blunt-pointed bistoury. In some, strong efforts at taxis have been made after the hernial sac has been reached.

It seems much better to do a routine Bassini operation. After the aponeurosis of the external oblique muscle has been incised and laid back toward each side, the internal oblique and transversalis come into view, and may be divided as is indicated. In this way the constriction is removed without opening the sac or injuring the intestine. The sac may then be opened, its contents examined, and unless the intestine has lost its vitality, it should be returned to the abdomen. The sac should be ligated close to the abdominal ring, and then cut off. The distal end may be left, or it may be excised nearly down to the testicle. The abdominal wall may be repaired in the routine way.

This gives almost a certainty of radical cure of the hernia, for in children the results of the operation are particularly good. The duration of the operation in favorable cases should not be more than fifteen to thirty minutes.

Ether seems to me a better anæsthetic than chloroform in these cases.

In summary the following statements may be made:

1. Infants less than a year in age endure operations for strangulated hernia remarkably well. The statistics of the cases published give a mortality for them which differs little from that for adults.

2. The histories of reported cases indicate that delay, while the strangulation existed, has been the chief source of danger.

3. When strangulation has occurred, the following procedures are recommended:

- (a) Elevation of the legs with the infant in a warm bath, accompanied by a very gentle pressure upon the hernial sac.

- (b) Very gentle taxis under anæsthesia, which, if unsuccessful, should be followed immediately by operation.

4. If strangulation has existed long, taxis is more dangerous than operation.

5. The records indicate a mortality of less than 10 per cent. when the operation is promptly done.

135 WEST SEVENTY-THIRD STREET.

## THE BABIES' WARDS OF THE NEW YORK POST-GRADUATE HOSPITAL.

BY HENRY DWIGHT CHAPIN, M.D.,

Professor of Diseases of Children at the New York Post-Graduate Medical School and Hospital.

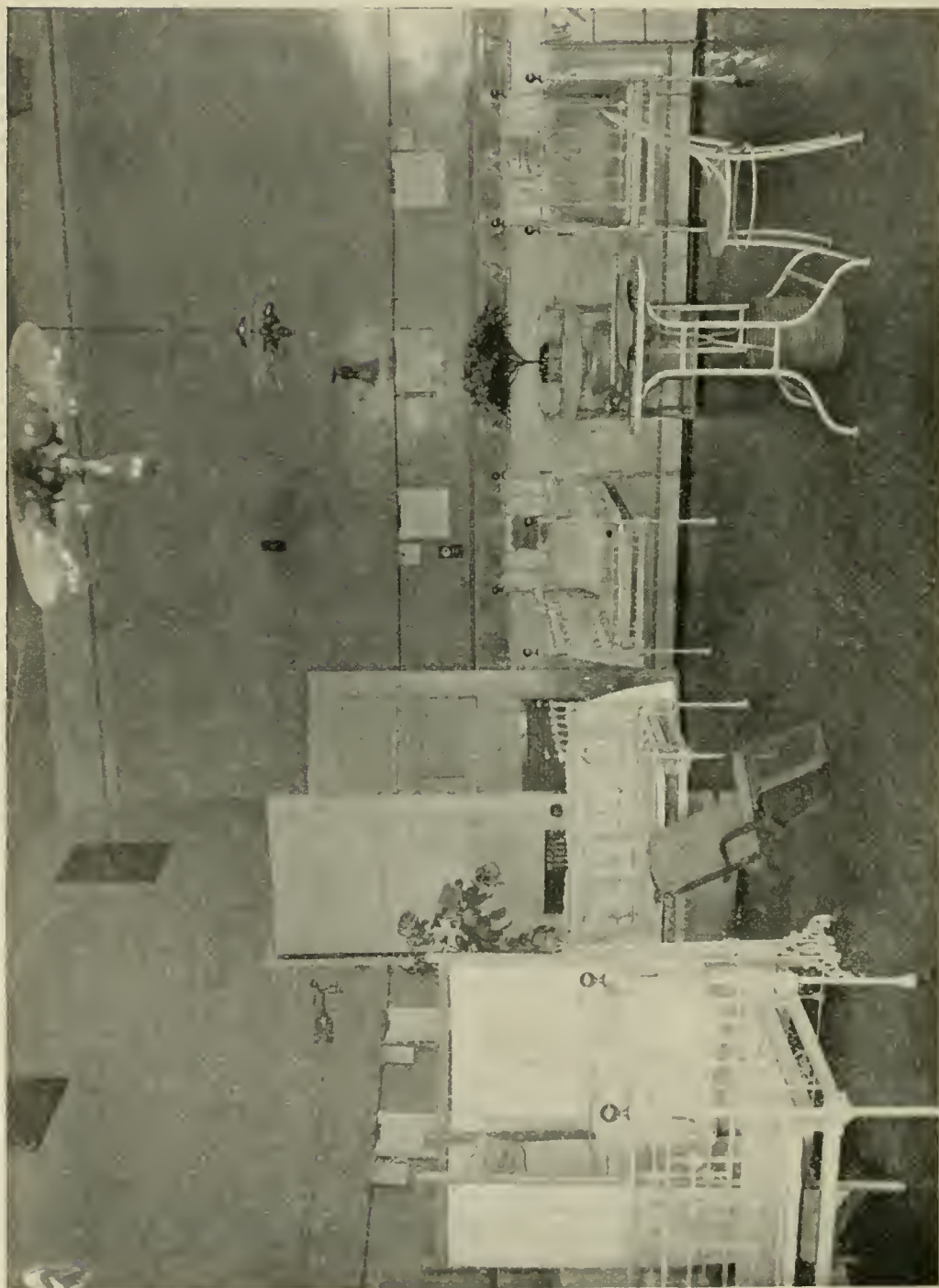
Although forming one of the divisions of a general hospital, the Babies' Wards, both in their inception and operation, may be considered in the light of a separate hospital. Indeed the scope of the work that is carried on in these wards and the extent and grade of their appliances exceed that of many special hospitals. They were started in 1883 by Dr. Sarah McNutt, who fitted up a separate ward in the old Post-Graduate Hospital building for the exclusive care of sick infants. The work gradually outgrew the quarters, and in a few years a three-story house next door was remodelled and occupied entirely by the wards. This was the first place in New York given over entirely and exclusively to the care and study of infantile disease, as separate from the mothers. Although these quarters were as good as could be procured by changing a residence into hospital purposes, they were not adapted to the best work, and special efforts were made to study the best requirements for the wards that were to form a part of the new hospital building.

The new edifice was completed in May, 1894, when the Babies' Wards were constituted as they now exist, one of the best equipped plants in the world for the care of sick infants. The wards occupy the fourth and fifth floors of the west wing of the hospital, and are self-contained, with the main entrance on the fourth floor. In addition, there are special waiting and examining rooms on the basement floor, four isolating rooms with a steam sterilizing apparatus on the top floor, and a sun parlor, enclosed in glass, with an adjacent roof-garden on the top of the building. On the fourth floor there are two surgical and two medical wards, the largest of the latter, the Innocenti, being forty-four feet long by twenty-two feet wide. There is a perfectly equipped operating-room adjacent to the surgical wards, and also a large linen-room, bath-room, closets, kitchen and pantry on the opposite side of the hallway. A sterilizer of sufficient size to contain two beds, if necessary, is on the same passageway. It can be filled with live steam at any time from the boiler

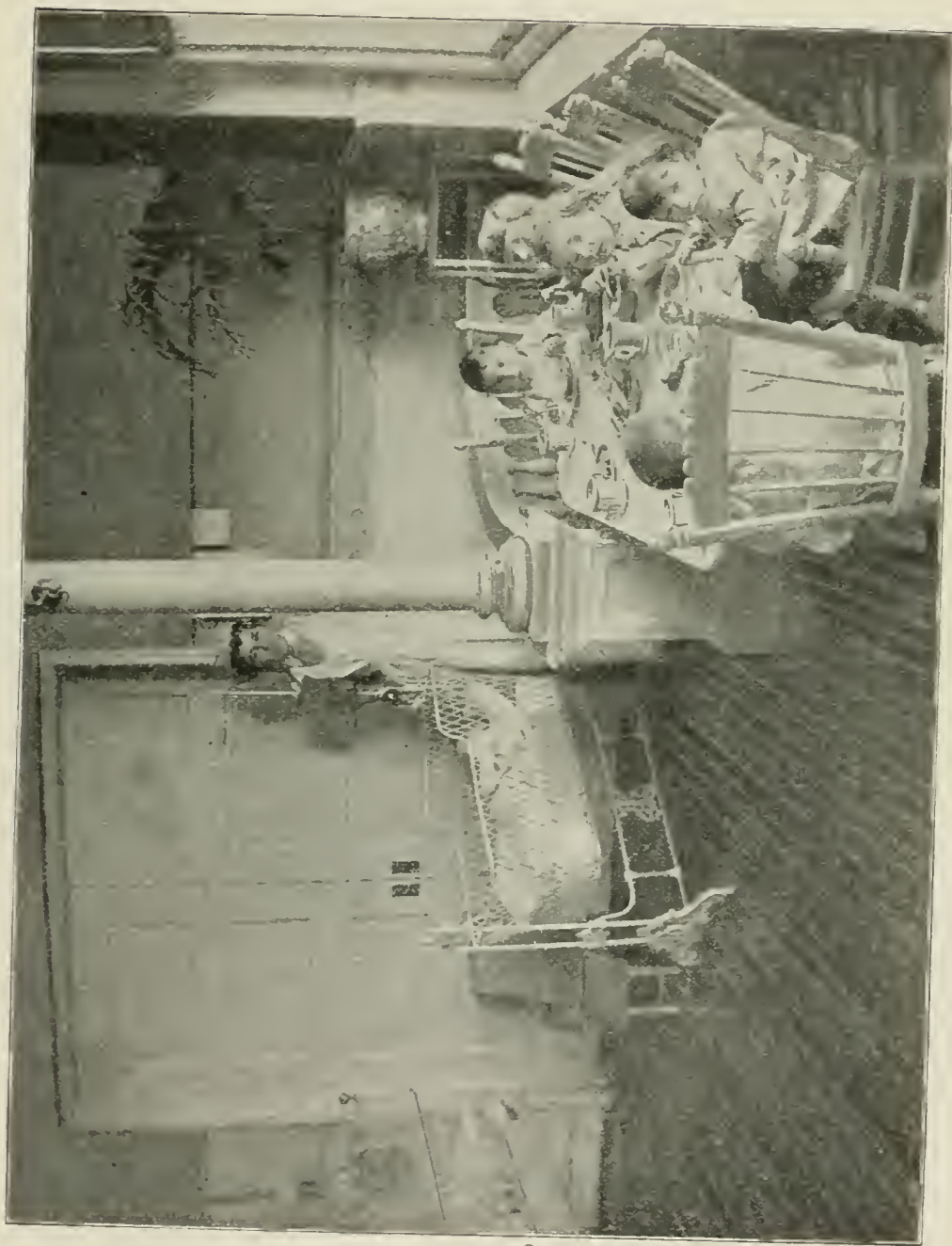


in the basement. On the fifth floor, there is one surgical and one medical ward, and a separate ward for the accommodation of mothers who may be nursing their infants, as it is contrary to the practice of the hospital ever to take a sick infant that may be suckling away from its mother's breast. Altogether there are fifty-two beds for the reception of cases. There is also a reception-room, kitchen, bath-room, closet and pantry on this floor.

In the kitchen there is a large stationary sterilizer, likewise connected with the general steam apparatus of the hospital, in which milk may be Pasteurized or sterilized. In warm weather sometimes three hundred nursing bottles with milk are treated in this sterilizer during the day. An ozone generator, connected with a dynamo in the cellar, is placed in one of the wards, and employed especially in the treatment of pneumonia cases. A large metal incubator, devised by Mr. John P. Putnam and Dr. Rotch, of Boston, is used for premature cases. It is made of polished copper and placed upon wheels. Ventilation is ensured by a clock-work apparatus at the entrance for air, and a ventilating flue at the exit, where a small fan shows whether the air is passing through properly or not. The baby, wrapped up in cotton, lies upon a water-bath and is heated by radiation from all sides. The pan upon which the infant is placed is part of a balance that registers its weight, so that any gain or loss may readily be detected without the necessity of removing the baby from the incubator. The temperature can accurately be maintained at 90° F. or 100° F., or at any intermediate point that seems best. The feeding is accomplished by a medicine dropper or by gavage. In spite of the completeness of this apparatus, little success has been attained in raising premature infants. Many seven and eight months babies have been kept alive for weeks, but they usually die at last from inanition. The cause of this appears to be two-fold; first they are not received in time, many being blue and cold when brought to the hospital after one or several days' exposure in a tenement-house; second, their organs do not appear to be sufficiently developed to maintain continuous life. The incubator always prolongs life, and doubtless under favoring conditions will not infrequently save it. Two of the cases, supposed to be between the sixth and seventh month of utero-gestation, weighed only two pounds, and yet were kept alive for several days. Still the results have not been nearly so good as reported from Paris and Moscow.



THE ZAIDEE WARD.



THE CONVALESCENTS' CORNER.



A careful system of weighings is carried out upon a scale that will register the fraction of an ounce. The frequency of weighing depends upon the nature of the case, varying from every other day to once a week. Much of the success of an infant's hospital will depend upon the nursing, which must be carefully and conscientiously done.

The Babies' Wards average eleven day and three night nurses, who are pupils in the regular training school. In addition, there are three ward maids constantly employed in drudgery, thus saving the time and strength of the nurses for more important work. Effort is thus made to watch the cases closely, so that soiled clothing may be quickly removed and the position of the infant frequently changed. No infant is allowed to be fed in its cot, unless critically ill or weak. They must be held in the arms of the nurse in the same way that a healthy infant at home is nourished. The success of an infant's hospital will depend upon strict attention to small details that are often taken for granted but not carefully observed, often from a lack in the number or quality of the nurses.

As the introduction and spread of contagion is one of the greatest dangers in an infant's hospital, great care is exercised in this regard, and usually with success. Each applicant for admittance is inspected in the examining room by the house doctor. If suitable for the hospital, the infant is given a warm bath and sponged off with a solution of bichloride of mercury (1 to 2000) before being taken up stairs to the receiving ward. If too ill for the bath, the sponging alone is employed. All the clothing is left below, and it comes to the ward wrapped in a warm blanket. Upon the weekly visiting day, one visitor only is allowed, and he or she is furnished with a calico gown to draw over the clothing. This precaution is taken as the babies come from the poorest tenement houses, where scarlet fever or latent diphtheria is very apt to exist. Frequent irrigations of the nostrils and throat with a normal salt solution is employed.

If suspicious symptoms develop in any case in the reception ward, it is at once removed to one of the isolating rooms on the roof for observation. When an infant leaves the hospital, blankets, pillows, sheets and all other articles about the bed and person are put in the large sterilizer and subjected to live steam. Woven wire mattresses alone are used, and these, with the metal cot, are washed with a carbolic acid solution (1 to 20). Thus



the next occupant of the bed is sure of a surgically clean reception. Considering the character of sick infants, secretions, together with the frequency of tubercular and other infective conditions, the importance of these details will be appreciated. Special care is exercised when female infants have any form of vaginal discharge. In such cases an antiseptic pad is applied and



THE ROOF GARDEN.

the diapers soaked in Labarraque's solution, a quart to a pail of water, before being otherwise cleansed.

The structure and furniture of the hospital are such as to favor strict cleanliness and asepsis. The chairs, tables, and stands are all of metal, glazed over with white coloring matter. The stands by the side of each bed are topped with thick glass. The plumbing is all exposed, most of the washstands and basins being of glass. The angles formed by the floors and walls and ceilings

are rounded as much as possible in order to avoid places for the accumulation of dust. Ornaments and pictures are not allowed upon the walls. The floors of the halls, bath-rooms, closets, and operating-room are of cement, while those of the wards are of thin strips of Georgia pine. The wards are lighted by electricity, with hangings from the ceilings, and each ward is furnished with one or more portable lamps, partly shaded, so that any cot may be brightly illuminated at night, without lighting or otherwise disturbing the rest of the ward. Ventilation is accomplished by two shafts, one for the introduction of fresh air and the other for withdrawal of impure air, in connection with an electric fan on each floor, and a revolving hood on the roof. Direct and cross ventilation by open windows can also be employed in summer. The wards are heated by air that has been forced through steam coils and distributed by means of the ventilating ducts. Open fireplaces are likewise placed in all the wards.

During the past year, 749 cases were treated in the wards, of whom 181 died ; 353 were cured and a majority of the remainder were improved. The seemingly large number of deaths is due to the fact that the curability of the infant is not considered on its admission. If it can be made more comfortable during its last hours, it is received into the wards as a matter of humanity, and many enter in a dying condition, especially in summer. The cases are drawn from the poorest families living in the most densely populated part of New York. A regular paid visitor is employed by the wards to visit the infants after their discharge in order to see if the improvement is constant, and, in case of destitution, to apply to the proper authorities for relief. As far as the writer knows, this is the only place in New York where a systematic effort is made to follow cases after discharge from the hospital. This is the weak point of all hospital work among the poor—relapses, or only temporary relief, owing to faulty life conditions in the home.\*

The ages of the 749 cases were as follows: Under two weeks, 41 cases; under one year, 358; between one and two years, 114; the remainder varying from three to four years, with occasionally a case of five years admitted for some special reason. The beds

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\* To those interested in this subject, the writer would refer to an article by himself in *The Forum* for March, 1894, entitled, "Child Study in the Hospital ; a Record of Six Hundred Cases."

are all free and these cases represent 15,291 days of free hospital treatment given.

As experience has shown the undesirability of allowing sick infants to remain too long in one place or one position, they are frequently taken to the sun parlor in winter and the roof garden in summer. The latter is covered with canvas and surrounded by vines and plants. A fresh-air home at Sea Cliff, L. I., is placed at the disposal of the wards for convalescing babies in summer. The equipment and operation of the wards receive very great aid by the active co-operation of a Ladies' Auxiliary Committee under the chairmanship of Miss Ella Russell. Constant instruction is given in the wards to physicians who come from all parts of the country to take the courses at the college.

#### SUSCEPTIBILITY OF INFANTS TO HOSPITALISM.

As there appears to be a tendency toward a multiplication of hospitals for infants, it seems proper to consider the effects that such temporary housing and treatment are liable to have upon sick babies. In making a few observations upon this subject, the writer speaks only for himself. An experience of twelve years in studying the subject in the hospital, summer as well as winter, may serve to justify any conclusions. During this time, the observance of certain very constant phenomena lead me to believe that infants should be placed in a hospital only under exceptional circumstances. The principal reason should be an entire inability to secure proper care and attendance at home. Entrance to a hospital should be limited to acute cases of illness, and discharge should take place immediately upon recovery, even if the latter is only partial. A speedy or satisfactory convalescence is impossible for an infant in a hospital. The earlier the age, the greater is the susceptibility to hospitalism, and the quicker it ensues. One of the first conditions to be noted is a progressive loss of weight that is not dependent upon the original disease, as it often takes place after recovery when the infant is not sent out soon enough. This ensuing atrophy bears an inverse ratio to the age, and is especially marked under six months. Older infants are less susceptible, but if kept long enough they will surely show stationary, and then losing weight. This often takes place while the infant is apparently digesting its food, which may be the best that can be artificially produced. Beginning



atrophy, not depending upon a lesion, should be an indication for immediate discharge from the hospital. If it gets beyond a certain point, no change of environment or food will save the infant. Accompanying this condition, there is marked hydræmia, dryness of the skin, and wearing off of the hair from the occiput. As a general rule, young infants should not be kept in hospital longer than a fortnight, unless for exceptional reasons. Another condition liable to develop in hospital infants, is latent pneumonia usually of the hypostatic variety. It is very insidious, usually accompanied by little or no rise in temperature, and is often detected for the first time at the autopsy. I have very rarely made a post-mortem upon an infant dying from any cause in hospital that has not shown this lesion.

Female children that are kept too long in hospital frequently get up a more or less severe form of vaginitis. This does not necessarily point to any want of cleanliness or attention, but I regard it frequently as due to lack of tone and vulnerability of all the mucous membranes, that accompany hospitalism. I have recently seen this exemplified at the Willard Parker Hospital. In the diphtheria wards there are no cases of vaginitis, but in the scarlatina wards, where the children are necessarily kept much longer, there are many cases. The same good care and cleanliness are observed in both divisions of the hospital, and the affection ensues from the necessary detention in the hospital. Children suffering from any form of tuberculosis occasionally get up a rather virulent form of vaginitis in hospital.

Outbreaks of contagious diseases are constant dangers in hospitals for infants and children, and can only be guarded against by the greatest care. Diphtheria, measles and pertussis are, from the nature of these diseases, most liable to creep in. Diphtheria sometimes appears to originate without heteroinfection, doubtless from Klebs-Loeffler bacilli that have long been latent in the throat. I have seen cases thus develop that have been for weeks in the hospital, without being visited by friends or in any possible contact with a case of the disease. This is especially liable to happen in scrofulous infants with enlarged glands, nasal catarrh and adenoids. Visitors, however, are often responsible for the bringing of contagion, and all possible safeguards should be thrown around this source of danger. It is impossible to entirely exclude parents, but all others, especially children, should be refused admittance for fear of contagion. In



view of the risks to which infants are subjected in collecting masses of them together, it seems proper that extreme care should be exercised when considering the subject of a hospital. Those who are responsible for the latter are not justified in simply supplying average care and conditions. The hygienic surroundings must be of the best, the nursing of a very high grade, and a most scrupulous and painstaking oversight exercised. One good nurse should be supplied to not more than four or five sick infants, and in some cases one nurse may be required for only two patients. Finally, the infants should be particularly watched for the first signs of hospitalism and promptly discharged before the malady has time to gain any hold on them. Many years ago Dr. A. Jacobi\* called attention to the susceptibility of infants to hospitalism and his warning does not seem to have attracted the attention that it warranted.

51 WEST FIFTY-FIRST STREET.

**Care of Infants After Operation.**—If the child is exhausted from loss of blood, a weak mustard plaster may be applied over the heart. One to ten will be sufficient strength, and be safer than a stronger plaster, as mustard plasters do escape even the trained hand, and are sometimes forgotten, when the tender skin would suffer. A mustard plaster is a very good stimulant for a weak heart. It should be left in place only until the skin has been reddened. You should keep the child in the horizontal position, and even elevate the feet. You may give either by mouth or by injection, a little strong coffee or brandy, but the latter should be given very sparingly to the child. It is very easy to get the poisonous effects of alcohol after ether in the child. Even a ten-drop dose, if repeated several times, will soon amount to a teaspoonful, and the infant is prostrated from drink. Among other ways of producing stimulation are the applications of heat, and of these the hot water bag is the best. In preparing the hot water bag, be sure that all air is excluded. Shake the bag so as to be sure that it contains no air. Nothing is more common than to find these bags half filled with air, and the skin in contact with the air instead of the water. Unscrew the top and press the water to the opening so that the air is driven out. Then, with the water overflowing, apply the cap. It is better not to completely fill the bag with water. You may have the bag very light, and still have it empty of air.—*Dr. Abbe, in Nursing Record.*

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\**N. Y. Medical Journal*, Jan., 1872.

## A SCHISTOSOME.

BY A. BROTHERS, M.D.,

New York.

In looking over an old book on "Kinderkrankheiten," by Meissner (published in 1844 at Leipzig), the writer refers to a case in his practice in which a fetus was born with the liver and entire intestinal canal outside of the abdominal cavity and covered by a transparent membrane, through which the coilings of the intestinal tract could readily be distinguished. He adds that Oken explained this condition by attributing it to the protracted presence of the intestines in the abdominal fissure, thus preventing the closure of the abdominal cavity. He also refers to the occasional occurrence of adhesions between the placenta and the abdominal surface of the fetus. As these are the principal anomalies in our case, it proves the adage that "there is nothing new under the sun." Tanner, in 1871, states that only four cases are known in which the life of the malformed child lasted for any time after birth.

Saint-Hilaire and his followers have divided simple monsters into 1. *autosites*, or those capable of existence after separation from the placental circulation; 2. *omphalosites*, or those incapable of such existence; and 3. *parasites*. The *autosites* include cases with eventration of the genito-urinary organs and viscera—so-called *celosomic* fetuses. In the sub-divisions of the *celosomic* fetuses are to be found the *schistosomes*, which are defined by Charpentier as monsters presenting a "lateral or median eventration throughout the entire extent of the abdomen, pelvic limbs lacking or imperfect. The abdominal wall is replaced by a thin membrane, through which the viscera may be seen." Our case, then, is an example of a schistosome.

For the accompanying photographs and for the privilege of examining the fetus I am indebted to the courtesy of Dr. Leon Cherurg, of this city. It was only with the greatest difficulty and pertinacity that he was able to overcome the ignorant prejudices of the family so as to secure the pictures. Acquiring possession or making a post-mortem examination of the fetus

was entirely out of the question. The history, in brief, was as follows:

Mrs. S., 22 years old, native of Russia, primipara. No history of syphilis. Five weeks previous to confinement she fell one story through the opening in the fire-escape, striking the right side of her body with violence against the iron ladder. Beyond suffering from severe fright and shock, the injury sus-

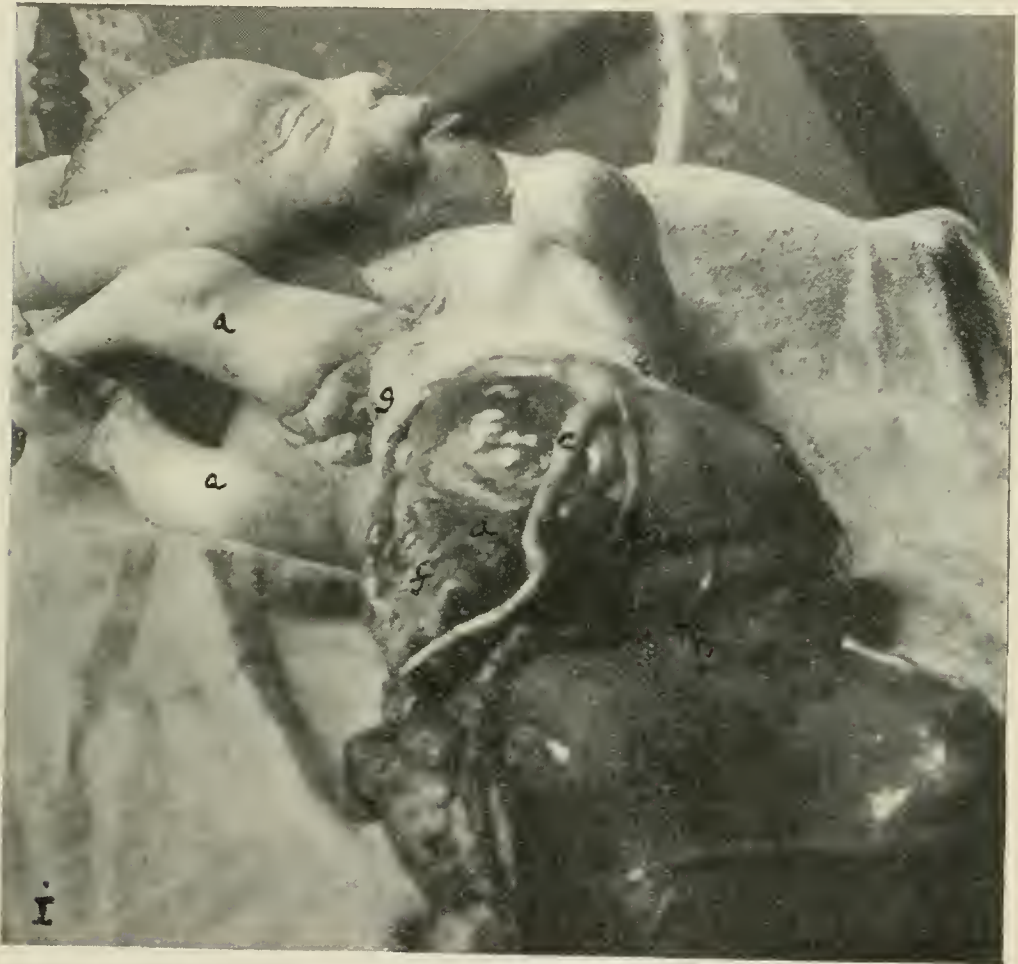


FIG. 1.—A RARE CASE OF CONGENITAL MALFORMATION.

*a.a.* Lower extremities of fetus rotated and bent backwards. *b.* Amniotic surface of placenta continuous with fetal integument and parietal peritoneum. *c.* Short umbilical cord. *d.* Extensive gap in anterior abdominal wall completely devoid of skin and roofed over by peritoneum only. *e.e.* Showing points of direct extension of amnion into peritoneum and skin. *f.* Extrophy of bladder. No gap at symphysis pubes. *g.* Undeveloped external genitals. Two halves of ununited clitoris.

tained was not sufficient to compel her to go to bed. The movements of the child were felt up to the day of labor, which



occurred at the seventh month. On December 25, 1896, a midwife was sent for. After rupturing the membranes she noticed something abnormal about the labor. Dr. Cherurg was called in about four hours later. On examining the woman he was struck by the appearance at the vulva of a tumor consisting of the fetal abdominal viscera and covered by a thin membrane. Passing his hand in the vagina he seized a leg and delivered fetus and placenta in one mass. The fetus was still-born, and no efforts at resuscitation were made.

On the next morning I was invited to examine the fetus, and made the following notes. The fetus was small and apparently



FIG. II.—SHOWING PROLAPUS OF ABDOMINAL CONTENTS.

*a.* Continuity of amnion and peritoneum. *b.* Intestines protruding through artificial tear. *c.* Spina bifida.

of 6½ months' development. The lower extremities were directed backwards almost at right angles to the axis of the body. The right limb lay above the left, indicating a lateral tilting of the pelvis on the spinal column. The head was directed to the right and backwards, so that it lay in close proximity to the lower limbs. In other words, there was pronounced lateral curvature of the spinal column with the convexity toward the left. Excepting this malposition of the lower limbs, the head and extremities seemed otherwise to be normal. Posteriorly a tumor, due to a spina bifida, extended from the lower

dorsal region to the tip of the coccyx. Anteriorly, the umbilical cord, which did not exceed six inches in length, was inserted in the usual position. From the region of the umbilicus to a point about one-half inch above the pubes, was a space in the anterior abdominal wall devoid of skin and covered by a thin, translucent membrane—probably the parietal peritoneum—through which was visible the abdominal contents. Through this space protruded a tumor which consisted of the liver, stomach, and intestines. To the left and continuous with the membrane covering the abdominal gap, was the amniotic surface of the placenta. The thin membranous covering of the abdomen presented a vertical laceration about three inches in length, which the midwife assured us had been caused by her fingers, and from which liquid had escaped. The amniotic surface of the placenta was continuous below and behind with the skin of the fetus. The bladder lay with its mucous surface entirely exposed on the membrane covering the abdominal space a slight distance above the pubes. There were no external genitals excepting two lateral protruding bodies which probably represented the ununited halves of the clitoris. The anus was represented by a small dimple in the integument which would not admit the tip of the little finger or a pencil beyond a fraction of an inch—therefore, imperforate anus.

The photographs represent most of the features of interest in the case. These features are summarized as follows: 1. The lateral flexion of the child's body; 2. The defect in the anterior abdominal wall; 3. The continuity of the amniotic aspect of the placenta with the surface of the child's body; 4. The spina bifida; 5. The absence of genitals and anus.

In conclusion, the question arises as to whether the injury sustained five weeks previous to labor bore any causal relationship to the defects and anomalies present in the case.

NOTES OF A CASE IN WHICH MARKED ENLARGEMENT  
OF THE LIVER, ASSOCIATED WITH SYMPTOMS RE-  
SEMBLING THOSE OF TYPHOID FEVER, OCCURRED  
IN A YOUNG CHILD.\*

BY A. D. BLACKADER, M.D.,

Professor of Pharmacology and Therapeutics, and Lecturer on Diseases of  
Children, McGill University, Montreal.

The usual conditions under which notable enlargement of the liver may occur in children are well recognized, and on its appearance we look for symptoms pointing to the presence of syphilis, tuberculosis, leukæmia, alcoholic or malarial poisoning, or amyloid or cardiac disease. Slight enlargement from congestion may sometimes be due to the absorption of ptomaines from the intestinal tract in cases of faulty digestion; to the administration of food containing articles more or less irritating to the hepatic cells; or to the action of toxins generated in the system during the course of some of the infectious fevers.

In the following case the enlargement was very notable. It began toward the close of the second week of fever, reached its maximum about the fourth week, and then slowly receded. It was associated with no tenderness, no ascites, no symptoms of jaundice. A careful examination, twelve weeks after the commencement of the attack, failed to reveal any undue enlargement of the liver, or irregularity in its borders.

In a very imperfect review of the literature on the subject, I have failed to note any reference made to a similar condition, with the exception of some cases reported recently in the *Journal de Clinique et de Thérapeutique Infantiles*, Paris, April 16, 1896, by Dr. Edouard Tordeus, of Brussels. This writer gives the history of five cases of lobar pneumonia, in which a very notable, but temporary, enlargement of the liver made its appearance a few days after complete defervescence had taken place. In two of these the firm, smooth edge could be distinctly felt as low down as the level of the umbilicus. There was no tenderness on palpation, no icterus, no ascites. The spleen was not enlarged, the appetite remained excellent, and the patient was in

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\* Read before the American Pediatric Society, Montreal, May 26, 1896.

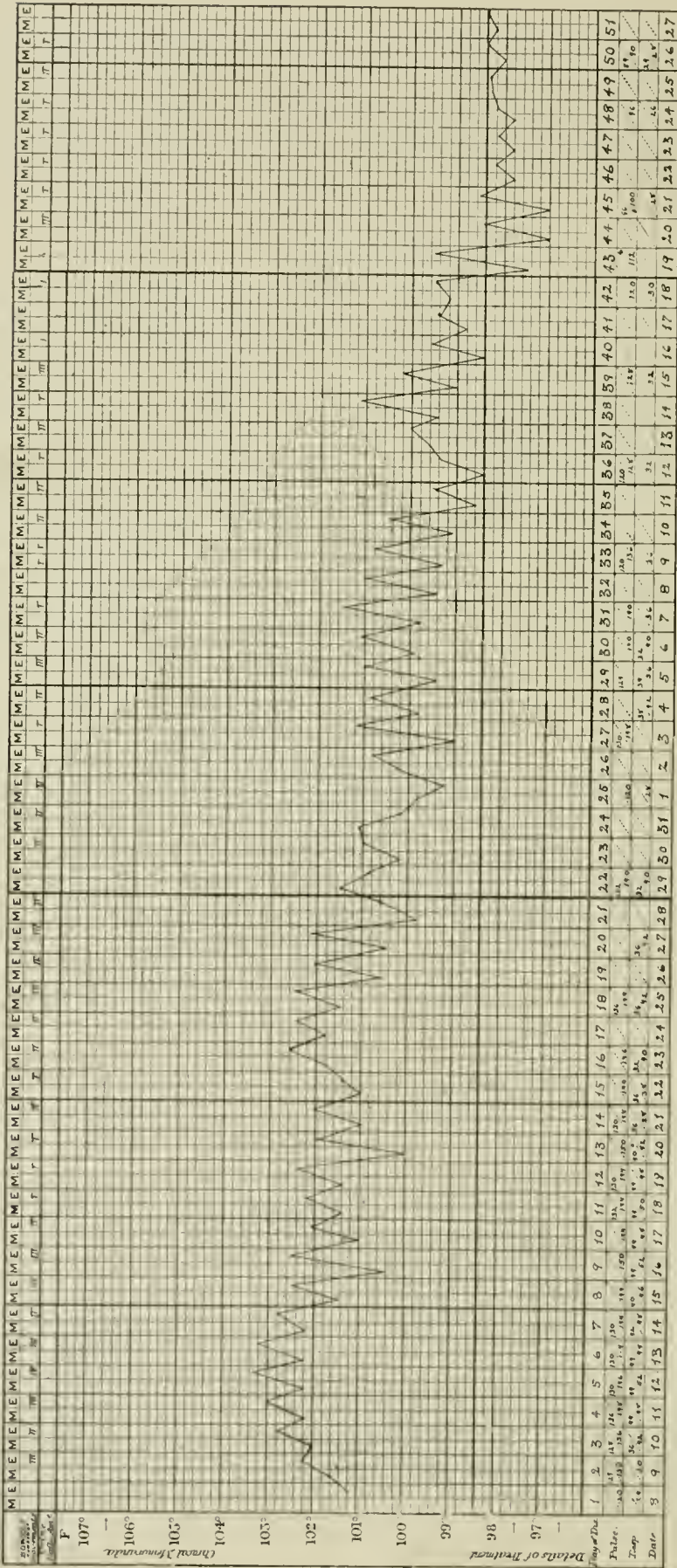


good spirits. Under suitable regimen the enlargement disappeared in a few weeks.

In my own case, although some of the symptoms simulated those of pneumonia, at no time was I able to obtain, by physical examination, definite symptoms of any consolidation, and the continued pyrexia appeared to oppose any such hypothesis.

The history of the case was as follows:

On the evening of March 8, 1896. I was summoned to see F. S., a bright, precocious child, aged two and a half years, whom I had attended at intervals from a few weeks after birth. Her parents were both in good health. The paternal grandfather died from interstitial nephritis of gouty origin; the father is a dyspeptic, and suffers from neuralgic attacks, probably also of gouty origin. The mother is of a nervous temperament, but is otherwise well. The child herself was nursed by the mother till the end of the third month, when, under my directions, she was gradually weaned. Artificial feeding proceeded very satisfactorily. The child, weighed every week, showed a steady gain in weight. Dentition was normal, and so far she had escaped all the eruptive fevers. Six weeks previously she had suffered from a slight influenzal attack, which had left her looking pale, and for which at the time I had prescribed a ferruginous tonic. On the evening of my visit I found her with flushed face and slightly coated tongue; pulse, 120; respiration, 24; temperature,  $101\frac{1}{3}^{\circ}$ . There was no complaint of pain, nor did a thorough examination reveal any abnormal condition. A simple alkaline mixture was prescribed. The temperature rose slowly, and on the evening of the fourth day reached  $103^{\circ}$  F. Respirations were now decidedly quickened, and the child appeared to have occasional attacks of pain, but the site of this was obscure, and appeared to be variable. The nights were restless. On the sixth day respiration still remained quickened. There was slight diarrhœa, associated with some pain, and greenish colored stools containing more than a normal amount of mucus. The abdomen was slightly distended, but no special tenderness was elicited on pressure. Splenic dulness was present. No abnormal physical signs were detected after repeated examinations of the chest. No rose spots were visible on the body. On the evening of the eighth day, as the diagnosis was still uncertain, Dr. Browne saw her with me in consultation. The daily range of temperature was now between  $102^{\circ}$  and  $103^{\circ}$  F.; the respira-



TEMPERATURE RANGE IN A CASE IN WHICH MARKED ENLARGEMENT OF THE LIVER WAS ASSOCIATED WITH SYMPTOMS RESEMBLING THOSE OF TYPHOID FEVER, IN A YOUNG CHILD.

tions from 40 to 48; the pulse was weak, 140 to 150. Diarrhœa still continued, with about the same characters. Cough could hardly be said to be present. Beyond an occasional sibilant râle no abnormal physical signs were detected in the chest. We both considered the case as possibly one of pneumonia, but no absolute diagnosis was made.

During the following week the symptoms remained about the same. The respirations were less rapid, averaging about 40 per minute, while the pulse varied from 120 to 140. There were two or three relaxed motions per day, of light color, and occasionally associated with some colicky pain. A cough occurred only occasionally, and was very slight in character. Repeated physical examinations revealed only a few loose bronchial râles toward the base. On the evening of March 22d, the area of liver dulness was first observed to be slightly increased, extending a full inch below the margin of the ribs in the nipple line. Splenic dulness increased, but the spleen was not palpable. The abdomen was slightly distended, but no special tenderness was detected on deep pressure.

A specimen of urine was not obtainable without using the catheter, but, from the appearance of the diapers, there was nothing abnormal either in its amount or its character.

The enlargement of the liver gradually increased until, by the 1st of April, its margin was distinctly palpable half an inch below the level of the umbilicus. Its surface and margin were quite smooth. No local tenderness was elicited. The enlargement was general. The lower margin of the spleen was also easily felt, extending one inch below the margin of the ribs. There was no icterus, and no ascites. Slight pitting was perceptible on deep pressure over the tibiæ.

Dr. Lafleur kindly saw the case at this time along with me, and corroborated the physical signs I have already noted. An examination of the blood, at my request, was made by him at this visit. The red corpuscles was found to number 4,666.400 per cubic mm. The white corpuscles 4,600 per cubic mm. There was no poikilocytosis. The red cells were of equal size and well formed. The hæmoglobin was not estimated.

The physical signs persisted for another fortnight, when a gradual diminution in the size of the liver followed a distinct improvement in the general symptoms. Not until the end of the sixth week did complete defervescence take place, and could



convalescence be said to be established. The edge of the liver, at this time, was still distinctly perceptible more than two fingers' breadth below the level of the ribs. It was six weeks later before I could assure the mother that it had regained its normal size.

The question of diagnosis in this case must, it seems to me, still remain obscure, with the probabilities pointing in favor of typhoid fever. The enlargement of the liver is, however, interesting, whatever be the diagnosis, and the future history of such a case will be instructive. That it was an enlargement and not a displacement, may be considered as well established as repeated examinations, verified by two other physicians, could render it. Its origin and character must remain in doubt.

236 MOUNTAIN STREET.

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#### DISCUSSION.

DR. HENRI LAFLEUR.—There was only one examination of the blood made, and the idea of acute leukæmia could be excluded. The total number of leucocytes was 4,600 to the c.c. As regards the rest of the condition I corroborate what Dr. Blackader says.

DR. AUGUST SEIBERT.—I would call attention to the report of Czerny and Moser, assistants of Prof. Epstein, of Prague, published about a year ago in regard to blood examinations in infants suffering from intestinal catarrh. They examined, I think, fifteen cases, and in each case found bacteria in the blood that are otherwise found in the intestines. In most of these cases secondary swelling of the liver, of the spleen, a slight nephritis, and broncho-pneumonia were present. Enlargement of the liver and of the spleen, in cases of chronic intestinal catarrh, and sometimes following mild acute intestinal infections, I have seen quite often, and within the last five to eight years have looked upon them as general infections entering the body through the intestine. This case of Dr. Blackader's might have developed in a similar way.

# HYPERPYREXIA AS A FATAL TERMINATION IN ENTEROCOLITIS, WITH REMARKS ON THE USE OF OPIUM IN THIS AND ALLIED AFFECTIONS.\*

BY D. J. MILTON MILLER, M.D.,

Philadelphia.

It has been the experience of the writer to have seen during the past three summers two cases of simple catarrhal enterocolitis in infants about twelve months of age, after running a mild course for six or seven days, rather suddenly develop an excessive temperature, with marked nervous symptoms, combined with cold extremities, but with no vomiting or serous discharges from the bowels, such as is seen in true cholera infantum; the fæcal discharges, on the contrary, which had never numbered more than six or seven a day, being greatly diminished with the onset of the excessive temperature. The cases were not under the immediate care of the writer, but were first seen by him after the serious symptoms had developed. Their history, briefly, is as follows:

CASE I.—A healthy, robust infant of twelve months, taken sick five days before with moderate fever and slight vomiting, which soon ceased, and which was followed by a moderate diarrhœa, consisting first of undigested milk and fæcal matter, and later of mucus and minute streaks of blood. The food, which had consisted of almost pure milk, with the addition of peptogenic milk powder, was continued by the attendant, and a mixture of bismuth, chalk, and paregoric prescribed. The diarrhœa not ceasing, and great restlessness having appeared, the paregoric was increased, for the purpose of allaying both symptoms, until the patient was taking twenty-five drops every three hours. This medication controlled the discharges, but the restlessness became more intense, and the surface and extremities cold. The writer found the little patient exceedingly restless, tossing from side to side, the extremities and surface of icy coldness, the pupils contracted and the head hot. There was no vomiting or profuse diarrhœa, the latter, on the contrary, had not numbered more than two or three daily during the previous forty-eight hours. The rectal temperature was 107.5° F. Calomel was administered, and the colon at once irrigated with two quarts of sterilized water. This brought away a large quantity

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\* Read before the Philadelphia Pediatric Society, March 9, 1897.

of undigested milk and fæces. A bath of ten minutes, at 95° F., gradually reduced by ice to 80° F., was next given. The child was then vigorously rubbed and wrapped in blankets. These measures had little effect on the temperature, which in two hours registered 107° F. Another bath of longer duration, and lowered to 75° F., followed by one grain of antipyrin, lowered the temperature to 104° F., but it was soon up again to 107.5° F. A third bath, followed by two grains of antipyrin, resulted in profuse diaphoresis and a fall to 103° F. The temperature, however, in a few hours rose to 106° F., and, in spite of every effort, continued to rise, until just before death it registered 109° F., the child dying in convulsions.

CASE II.—Child of thirteen months, ill for one week with mild ileo-colitis, as shown by six or seven mucous, occasionally blood-streaked stools, daily; moderate fever, and absolutely no vomiting. In this case the attendant had discontinued the milk and substituted beef juices and farinaceous waters after the first three or four days. A mixture containing opium (dose unknown), was prescribed; but irrigation was not practiced. The movements diminished, but great restlessness and cold surface developed. At the writer's visit, the child presented the same symptoms as Case I., except that the jactitation and restlessness were more marked and the dyspnœa greater. The pupils were contracted. There was no vomiting or serous diarrhœa, and nothing abnormal could be discovered in the lungs or other organs. The temperature (rectal), was 105.4° F. The same line of treatment followed in Case I., was advised. The writer did not see the child again, but learned that the injection brought away curdled milk, and that the symptoms continued until death, which occurred about twenty-four hours after the onset of the serious symptoms.

Two factors should be considered in endeavoring to explain the fatal termination in these cases of apparently mild enterocolitis, which, in the ordinary course of events, would have resulted either in recovery or in follicular ulceration, and death from exhaustion. The first is the continuance of the milk diet, the second the administration of opium in one case, at least, in large doses, and its continuance after the serious symptoms had appeared. Both of these factors, either alone or together, would be sufficient to cause the profound toxic symptoms from which these infants undoubtedly suffered.

Dr. Chapin (ARCHIVES OF PEDIATRICS, Vol. xii., p. 817), has reported a number of cases of hyperpyrexia in infants, which, from the absence of other apparent disturbances, beyond mild diarrhœa, he ascribes to an intoxication from intestinal fermenta-



tion, and cites the studies of Centanni; that high fever may be produced by eating rotten food, and through stagnant secretions in gastro-intestinal disturbances. Chapin reports several cases which seem to support this view. One, in particular, is so similar to the first case described this evening, that it may be briefly quoted: A child of seven months, sick for eight days with a dyspeptic diarrhœa, had suddenly a temperature of  $105^{\circ}$  F., which dropped in two hours to  $101\frac{2}{3}^{\circ}$  F. The next day, at 8:00 P.M., the temperature was  $105\frac{1}{2}^{\circ}$  F., but in an hour fell to  $100^{\circ}$  F. After this the child improved, but in a few days the temperature rose suddenly to  $105^{\circ}$  F., falling in two hours to  $98^{\circ}$  F. The child was then discharged. In a few days it was brought back to the hospital, having been improperly fed, in a restless condition. At 9:30 P.M. the rectal temperature was  $110.4^{\circ}$  F. No disturbance beyond the bowel trouble was discoverable. At 10:30 P.M., the temperature was  $109^{\circ}$  F., when the baby died. Dr. Chapin states his belief that in this case the hyperpyrexia was due to pyrotoxin developed from bacteria within the intestinal canal, and that in the majority of cases of sudden and extreme rise of temperature the cause will be found in the gastro-enteric tract.

In the first of our own cases, the milk, of which the infant was taking fifty ounces daily, almost pure, and modified with peptogenic milk powder, had been continued throughout the attack, while the paregoric was given in increasing doses up to twenty-five drops every three hours. This lessened the diarrhœa, but was followed by rising temperature and great restlessness—in a word, with symptoms of profound intoxication. In Case II. the milk had been stopped after a few days' illness, and non-fermentable food substituted. Yet it was still present when the intestines were washed out. And, although the milk was discontinued, no effort was made to secure its removal, or that of the other intestinal contents, while the opium was continued after the toxic symptoms had appeared.

Hyperpyrexia, apart from those cases that develop into genuine cholera infantum, cannot be a very common termination in catarrhal entero-colitis, if we are to judge from the statements of systematic writers. Little or no reference is made to such a condition in the works of J. Lewis Smith, Emmett Holt, T. M. Rotch, Victor C. Vaughan, and Louis Starr. Yet, theoretically, we would expect to find this symptom, if means are not taken

to clear the bowels of the fermenting and putrifying products of digestion, or if remedies that prevent their evacuation are employed.

It is not reasonable, in view of these facts, to ascribe the untoward results in our cases to arrest of peristalsis and confinement within the intestinal canal, particularly in Case I., of masses of fermenting food and decomposing fæces, from which poisons were absorbed, producing the hyperpyrexia and other toxic symptoms.

It cannot be urged that these were cases of true cholera infantum, which, as has been pointed out by Holt, is apt to supervene upon a mild dyspeptic diarrhœa or simple enterocolitis, as they did not present any of the symptoms of that affection beyond fever, restlessness and cold extremities. The fæcal discharges, on the contrary, became less, and the diminution was not that seen in genuine choleriform diarrhœa, just before the end, when the patient passes into collapse. It occurred at the beginning of the high fever, as if there was some connection between the two phenomena.

Nor were the toxic symptoms due to the action of the opium directly, since the patients did not present any evidences of excessive doses of that drug. There was no stupor, no drowsiness, and, although the pupils were contracted, they were not immoderately so.

Whether or not the administration of opium was the indirect cause of the toxic phenomena in these babies (as it is the writer's belief it was), it seems not out of place to again direct attention to the well-known fact, that, in the diarrhœal affections of infants, especially those occurring during the summer season, opium and its preparations should be given with extreme caution, as serious results may arise from their free or routine administration.

As a rule, the diarrhœa in these affections is the result of putrefactive and fermentative changes, and the discharges are conservative—an effort on the part of nature to rid the intestines of materials to whose presence the fever and other symptoms are due. Opium arrests the intestinal movements and prevents the elimination of these materials, and may give rise to grave symptoms of intoxication and sepsis. In the acute dyspeptic diarrhœa, or the acute gastro-enteric infections, it is rarely necessary. A preliminary dose of calomel or oil, with cutting

off of all fermentable food, or, in many cases, absolute interdiction of all food for twenty-four hours, and the administration, after the bowels have been thoroughly cleansed by cathartics or irrigation, of bismuth in large doses (60 to 120 grains daily to a child of twelve months), with, perhaps, a little chalk and rhubarb, have proved, in the writer's experience, in the majority of cases, sufficient for a cure. In the graver cases, and in entero-colitis and colitis, the rule to withhold the exhibition of opium until the stomach and bowels have been thoroughly emptied by lavage, cathartics and irrigation is still more imperative. When this has been done, opium can be administered in small doses, especially if there is much pain and frequent watery discharges, but never to the point of checking the latter entirely. The chief indication for opium is pain (particularly acute, colicky pain), and tenesmus, and when the movements are profuse and watery. When pain is absent, and the evacuations not serous or watery, or much increased in frequency, or when they consist of undigested food or offensive faecal matter, and *when the temperature is high, or shows a tendency to rise, or when nervous and cerebral symptoms begin to manifest themselves*, its administration is unsafe; particularly is this true if any of these symptoms supervene soon after its exhibition.

The deleterious effects of opium are not so readily produced when the drug is given by the rectum, and this method of administration is often of the greatest value in ileo-colitis, where the lower part of the bowel is most frequently affected. Here the diseased condition is better treated by irrigation than by giving drugs, especially opium, by the mouth, and, if there is much pain and tenesmus, the happiest results are sometimes obtained by laudanum and starch injections (three to five drops of laudanum in an ounce or two of starch water, for a child of one year).

In all cases, opium should be given cautiously, always alone, *i.e.*, separately, or added to whatever mixture the patient is taking, at the time of administration, and *never as an ingredient* of the diarrhoea mixture itself. By giving it in this way its effects can be watched, and it can be withdrawn whenever unfavorable symptoms arise, without stopping whatever other mixture the baby is taking.

The extreme susceptibility of infants should always be borne in mind in giving opium in early life. The dose, therefore,



should be small. For a child of one year, two and a half to five minims of paregoric, or half a drop (one-fourth minim) of the tincture, or one-sixth to one-fourth grain of Dover's powder, repeated at two, three or four hour intervals, are usually sufficient doses. Children of six months may take half these amounts, while in those under eight or six weeks it is questionable whether its administration is ever advisable, and then only in very small quantities—not more than  $\frac{1}{32}$  minim of the tincture. In conclusion, the writer would ask the indulgence of the members of the Society in emphasizing principles so familiar to every well-informed physician; but the importance of the matter, and the serious results that may follow the careless or routine administration of opium in the diarrhœal affections of infancy, he hopes will be regarded as a sufficient excuse for so doing.

345 SOUTH EIGHTEENTH STREET.

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**The Action of Thyroid Gland on Growth and Obesity.**—BOURNEVILLE (*Progrès Méd.*) gives tables showing the action of thyroid gland on growth and obesity. In three cases of myxœdematous idiots, aged from fourteen to thirty years, the striking points were a loss of weight and an increase of waist measurement—that is of growth. It was then tried in three cases of obesity in idiots (two macrocephalic, aged eleven and twenty-eight, and one epileptic, aged eleven). Their growth under treatment was proportionally more in four, five, or six months than the average growth of eighteen untreated imbeciles or epileptics during their tenth, eleventh, and twelfth year, which were taken as more approaching normal children to control these experiments. This growth is still more apparent when compared with that before the thyroid treatment, when it was absent or retarded. As regards obesity, two of the idiots lost weight rapidly during the treatment, while the third gained during treatment and lost weight rapidly afterwards. Otherwise the rule was that (1) there was a rapid loss of weight during treatment; (2) after a certain time the gland lost its effect, and the weight remained stationary; (3) generally, shortly after the treatment ceased, the weight rose again. Hence the necessity of breaks in the treatment. In the epileptic case, the number of fits increased while the gland was being given. These results agree with those published by Hertoghe regarding the influence of thyroid gland on children whose growth has been retarded by causes other than myxœdema.—*British Medical Journal.*

# Clinical Memoranda.

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## PAPILLOMA OF THE LARYNX.\*

BY WILLIAM CHEATHAM, M.D.,

Professor of Ophthalmology, Otology, and Laryngology in the Louisville Medical College, Louisville, Ky.

Two or three weeks ago Dr. Pusey brought a patient to the clinic, at the Louisville Medical College, that had been referred to him by Dr. Hancock, of Jeffersonville, Ind. A child, aged two and one half years, had some trouble with the throat, which had existed for a year, producing a gradual stenosis of the larynx. In a child of this age it is impossible to make a laryngoscopic examination. I felt in the throat with my finger and could detect a very hard growth, feeling almost like a foreign body. It was impossible to make a very satisfactory examination, and I proposed at some future time to administer chloroform, for the purpose of making a more thorough investigation. The patient disappeared, and I heard nothing more of it until Dr. Pusey brought me this pathological specimen, which I take to be a papilloma of the larynx. The cords have entirely disappeared in the mass; it is warty in appearance, characteristic of papilloma.

Papillomata are the most common growths affecting the larynx in childhood, and, like other benign growths, are nearly always situated above the glottis. I have had no microscopical examination made of the specimen, but assume it is a papilloma. The child, I should have said, died of asphyxia.

Virchow has made a differentiation between pachyderma-verruca and pachyderma-diffusa, the former being papillomata, that do not extend into the mucosa, simply involving the epithelial lining, the latter extending into the mucosa. I think in this case the life of the child might have been prolonged, and, perhaps, saved by early intubation. Some time ago I attended a child with a papilloma in this situation. A tube was introduced which was worn for eighteen months, the growth finally

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\* Reported to the Louisville Clinical Society.

disappearing entirely by pressure of the tube, absorption having taken place.

In the case reported I suggested intubation or tracheotomy, but the mother would not consent to any operative interference, and the child died within a week after I saw it. These growths can sometimes be removed with forceps; they are sometimes attached only by a small pedicle, but the base is usually large, representing a sessile formation.

I have seen four cases of this kind, two having occurred in my own practice, both of which were relieved by prompt intubation, the growths disappearing as a result of pressure.

Dr. S. G. Dabney in discussing the case said that it was greatly to be regretted that the family refused proper treatment, as the child's life might have been saved thereby. The method of treatment suggested was the one that would occur to every operator. Insertion of a tube was the simplest process, and probably the best method of treatment. Pressure of the tube itself seemed in some cases to exercise a curative action and to cause the growth to disappear.

Dr. Louis Frank said that he thought there could be no doubt that the specimen was a papilloma. In some situations papillomata were prone to give rise to troublesome bleeding. There was a striking similarity, histologically, between these growths and carcinomata, in that both are made up largely of epithelial elements. Papillomatous growths in other parts of the body often took on carcinomatous degeneration. Treatment by pressure was often an excellent plan, as these small growths externally often disappeared as a result of pressure.

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**The Treatment of Pneumonia in Children.**—Dr. John M. Bass concluded an excellent article on this subject in the *Southern Practitioner* with the statement that the modern treatment of pneumonia consists chiefly of great care to the details of ventilation, of feeding, and counter-irritation; in resorting to baths, spongings, the hot water bottle and ice cap to govern temperature and pain, rather than antipyretics and anodynes, and to the avoidance of medicines which interfere in any degree with alimentation, and a resort to careful stimulation, and the intelligent use of as few drugs as possible.



## Clinical Sketch.

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### MELÆNA NEONATORUM.

Although hemorrhage from the gastro-intestinal tract during the first days of life is not of very frequent occurrence, when it does occur its onset is so sudden, and its course so rapid and fatal, that it becomes a condition of great interest. It is, in fact, one of the most trying conditions which the practitioner can meet. Such hemorrhages occur, in a very large proportion of cases, before the fourth day of life, the greater number occurring during the first twenty-four hours. They are extremely rare after the sixth day, but cases have been reported as late as the second and third weeks.

The first symptom is usually a sudden and totally unexpected discharge of blood from the bowels or stomach. These discharges are sometimes profuse, and follow each other in quick succession, so that the infant rapidly passes into a condition of collapse. It cries in a faint and wailing tone, the skin becomes cold, the surface is blanched, and the fontanelle is depressed. Death frequently occurs within twenty-four hours. If the hemorrhage ceases and the infant survives the first day, recovery may take place. Recurrence does not commonly occur after the hemorrhages have entirely ceased for twenty-four hours. Occasionally three or four hemorrhages occur during a period of a few hours and then cease, and the infant, though seriously prostrated, makes a rapid recovery.

When the blood is vomited, it is usually sufficiently characteristic in its appearance to leave no doubt as to its true nature. When hemorrhage occurs from the bowel, there is little doubt, as a rule, as to the nature of the discharge, but occasionally it is so black and tarry as to be distinguished with difficulty from meconium. The condition is always serious and the mortality is high.

The cause of melæna is not certainly known. It is evidently something which produces radical changes in the blood. Holt lays stress upon the fragile condition of the blood vessels in early infancy, and the profound changes which take place in the cir-

culation soon after birth. It is certain that the condition is not in the great majority of cases hæmophilia, but rather a self-limited disease which runs a definite course and terminates within a comparatively short period in recovery or death. The tendency to bleed sometimes continues for but a few hours, and ordinarily ceases within a few days. Pyogenic infection does not explain most of the cases. The clinical manifestations of the disease are strongly suggestive of an infectious origin, but no specific bacterium has been certainly discovered. Gærtner has recently described a bacillus, which it is quite possible may prove to be the specific germ of melæna.

In the case of hemorrhage in a young infant, the diagnosis should be made with great care, and should never be taken for granted. In hemorrhage from the stomach, it should not be forgotten that sufficient blood may be swallowed from a fissured nipple to color the stomach contents. In intestinal hemorrhage, the possibility of invagination with its accompanying bloody discharge should also be remembered, and should always be excluded. The blood in such conditions, however, is usually much less in amount than in melæna, neither has it the black and tarry appearance.

Treatment is extremely unsatisfactory. Absolute quiet is essential, and to secure this, small doses of paregoric are admissible. Hemorrhage from the stomach may possibly be checked by the administration of gallic acid, but it is extremely doubtful whether any astringent can be relied upon to check intestinal hemorrhage. The effect of ergotine is also extremely doubtful. More good will unquestionably be accomplished by enforcing strict quiet, than by the administration of nauseating or active drugs. Even nursing should be prohibited in extreme cases; the child being fed with a spoon or medicine dropper. The extremities should be kept warm, and stimulants should be administered, if the prostration is great.

# ARCHIVES OF PEDIATRICS.

DEVOTED TO THE  
DISEASES OF INFANTS AND CHILDREN.

MAY, 1897.

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## OPIUM IN PEDIATRIC PRACTICE.

The article in the present number by Dr. Miller shows very clearly the disastrous results which may follow the improper use of opium. Opium is justly regarded as one of the most valuable drugs at our command. On the whole, its loss would, no doubt, be felt more keenly than that of any other drug. Its very potency, however, renders intelligence and caution in its use, doubly necessary.

It is a common belief that although opium is one of the most useful of drugs in the diseases of adults, it is dangerous and not adapted to the needs of sick children. That it is an unsafe drug when administered to infants without discrimination, there can be no doubt. When given in proper doses and with knowledge of its therapeutic properties it is safe and satisfactory. Children are especially susceptible to the action of opium and its preparations, and more discrimination is necessary in its administration to them than to adults. This fact, however, is not sufficient reason for its total abandonment in pediatric practice. The physician who takes that course deprives himself of one of his most potent weapons. It should rather lead to a more careful



study of its physiological actions and therapeutic applications. Such study of this and of other old and tried remedies, would lead to far more rational prescribing with better results than does the present mad rush after new and untried remedies.

In prescribing opium for both children and adults, its varied and contradictory actions should never be forgotten. These actions may be briefly summarized as follows: 1, Opium stimulates the heart; 2, weakens the respiration by acting upon the respiratory centre of the medulla; 3, blunts the sensory nerves; 4, decreases the secretion of the digestive tract, the bronchi, and all mucous surfaces, the liver and various glands; 5, increases, often, the secretion of the skin and kidneys; 6, decreases the action of the unstripped muscular fibre, thus checking peristalsis and spasm of the intestine, spasm of ducts, and action of the bronchi and bladder.

A drug acting in such varied ways cannot be used thoughtlessly without untoward results, but with intelligence and discriminating care it becomes a remedy powerful for good.

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## THE USE OF OPIUM IN THE DIARRHŒAL DISEASES OF CHILDREN.

In no other condition is so much discrimination demanded in prescribing opium as in the diarrhœal diseases of infants and young children. Much opposition to its use has been elicited during recent years, and many practitioners have discarded it entirely. Much of this opposition is, unquestionably, well founded. While its improper use may do great harm, when properly used, it is an agent too potent for good to be wholly abandoned. We had occasion some time since to present in brief form its indications and contra-indications in diarrhœa as follows:

It is contra-indicated—1, in the first stages of acute diarrhœa, before the intestinal canal has been freed from decomposing matter; 2, when the passages are infrequent and of bad odor; 3,

when there is a high temperature or cerebral symptoms are present; 4, when its use is followed by elevation of temperature or the passages become more offensive—symptoms which indicate toxic infection from putrefying intestinal contents.

It is indicated—1, when the passages are frequent, with pain; 2, when the passages are large and watery; 3, in dysenteric diarrhœa, together with castor oil or a saline; 4, in late stages, with small, frequent, nagging passages; 5, when the passages consist largely of undigested food, and the bowels act as soon as food is taken into the stomach.

The most important contra-indications are admirably described by Dr. Miller. In the cases he reports, the dangerous symptoms were, no doubt, due to the absorption of toxic principles generated in the intestinal canal. The locking up of such putrefying matter by the use of opium violated every right principle of practice. Diarrhœa would have been a conservative process, and frequent movements should have been encouraged. He clearly shows the reason for possible bad results in the following sentence: “Opium arrests the intestinal movements, and prevents the elimination of these toxic materials, and may give rise to grave symptoms of intoxication and sepsis.”

The dose should be as small as possible, sufficient being given to relieve pain and check peristalsis. It should not be added to the ordinary diarrhœa mixture, to be repeated at short intervals. It should be given alone, and at intervals sufficient to allow the effect of one dose to partially subside before another is given. This interval will rarely be less than four hours.

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## OPIUM IN THE PULMONARY DISEASES OF CHILDREN.

The use of opium in the pulmonary and bronchial diseases of children demands but little less caution than does its use in the diarrhœal diseases. Opium, or one of its preparations, forms one of the most common ingredients of the average cough mixture. The chief office of the ordinary cough syrup seems to be

to destroy the appetite, disturb the digestion, and make the child peevish.

For an expectorant cough, opiates should be given sparingly—the more the secretion the less the opium. Here, as in the diarrhœal diseases, it is desirable to remove abnormal secretions as completely as possible. In non-expectorant coughs it may be used more freely. In the dry, painful cough of pleurisy it may be given more freely than in almost any other condition. In the early, dry stage of bronchitis it may be given in moderate doses, as well as for the harassing cough of the latter stages, if the respiration is free and the circulation is good. It should never be given in doses sufficient to materially retard expectoration. As cough frequently becomes more dry and harassing at night, opium is sometimes indicated at that time when it is not required during the day. In general terms it may be said that the more deeply the respiratory tract is involved, the more cautiously should opium be administered. While occasional small doses may be admissible in broncho-pneumonia, it is very rarely indicated in that disease.

Many of the new remedies recently presented to the profession have been vaunted as of particular value in the treatment of spasmodic laryngitis, and a few have proved to be so. Notwithstanding these claims, one of the most efficient means of relieving spasmodic croup is a full dose of opium combined with ipecac.

As in treating diarrhœa, it is wiser to administer the opiate alone, and not by adding it to the ordinary cough mixture. The dose can thus be regulated with more certainty, while the cough mixture can be increased or diminished as the exigencies of the case may require. Narcotism should be strictly avoided. The dose of opium varies greatly, and no set rules can be given. It is comparatively small, especially under eight months, very young infants being particularly susceptible to its action. The doses given by Dr. Miller are certainly very small, and err upon the side of safety.



## MEDICAL INSPECTION OF SCHOOLS.

Daily medical inspection of the public schools of New York City was begun on the morning of March 29th. Such inspection was decided upon some time since, but the preliminary work, before the system could be placed in practical operation, was very great and demanded much time and thought on the part of the Board of Health. The work is to be performed by one hundred and fifty medical examiners appointed under Civil Service rules. The results of the first day's inspection amply proved the wisdom of such a system and clearly showed the results for good which its judicious enforcement will attain. On that day one hundred and forty children were excluded from the schools. There were fourteen cases of diphtheria, three of measles, and one of scarlet fever; thirty-five cases of contagious eye diseases, three of mumps, and one of croup; of parasitic diseases there were thirty-five cases where the head was affected and twelve of the body; and there were eight cases of chicken-pox and eight of skin diseases.

These results are simply a tangible demonstration of what every observing practitioner has long believed to be the source of much contagious disease. The results of the work in New York are not materially different from those obtained by medical inspection of the schools of other places. The more dense the population in any locality the greater the necessity for such inspection and the more decided will be the results. New York, therefore, with her dense population in certain districts may be expected to derive an unusual amount of good from such inspection. If the work is judiciously and conscientiously carried out, it will certainly aid materially in restricting the spread of contagious diseases and in reducing the death rate.

The actual number of cases excluded from the schools will soon be but part of the good accomplished by the inspection. Parents, when they learn that their children will not be received at school if ill with any form of contagious disease, will be much

more cautious in sending them. It will also prove a valuable means of teaching them that certain diseases of the eye and skin are contagious, that the stage of desquamation of the infectious diseases is dangerous, and that a sore throat, even if apparently mild, should receive attention. The results, both direct and indirect, will far more than outweigh in value the expense involved. The money thus spent is certain to prove one of the best investments, from a financial point of view, which the city could have made.

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### STRANGULATED HERNIA IN YOUNG INFANTS.

Dr. Dowd's instructive paper in the present number, on hernia in infants, is a most careful review of a subject upon which very little has been written in this country. His conclusions in the light of the evidence he presents are certainly moderate and judicious. Of great importance to the practitioner, is the fact that young infants, while they seem to bear operation as well as do adults, do not bear so well the effects of strangulation. The inference, therefore, is clear that prompt operation is even more essential in infancy than in later life. It is equally obvious that intemperate attempts at reduction by taxis should be avoided even more carefully in the infant than in the adult. Dr. Dowd's suggestions as to management when strangulation has occurred are worthy of especial notice: "Elevation of the legs with the infant in a warm bath, accompanied by a very gentle pressure upon the hernial sac; very gentle taxis under anæsthesia, which, if unsuccessful, should be followed immediately by operation."

## Bibliography.

**The International Medical Annual and Practitioner's Index: A Work of Reference for Medical Practitioners.** *By Over Forty Contributors.* 1897. Fifteenth Year. New York : E. B. Treat. Pp. l. 724. Price \$2.75.

Each yearly volume of this valuable publication is a distinct improvement over its predecessor, not alone in increased size, but in excellence of the contained material. The present volume is, unquestionably, the best which has yet appeared. The general arrangement and scope of the work continues the same. The review of therapeutic progress for 1896, by Dr. William Murrell, of London, is worthy of very careful reading. It differs materially from the review of former years in the comparatively large space devoted to glandular therapeutics and to serum therapeutics.

Under the latter heading the present position of the serum treatment in eleven different diseases is considered, among them being tuberculosis, rabies, pneumonia, typhoid fever, tetanus, and diphtheria. In several of these conditions, the author believes that the treatment has accomplished but little, but the general results, thus far obtained, he believes, promise a successful future for this new mode of treatment. Regarding the serum treatment in diphtheria, he speaks as follows : "It is in this disease that the serum treatment has registered its greatest triumph. The slight accidents caused by the treatment are to be disregarded in view of its remarkable efficacy."

The dictionary of new remedies is very complete, over seventy-five pages being devoted to it. Most of the new remedies are mentioned and the latest discoveries regarding them.

The greater part of the work, as in former years, is devoted to new treatment, over five hundred pages being occupied with this subject. Among the articles of particular interest to the pediatric practitioner are those on retro-pharyngeal abscess, adenoid growths, bronchitis, chorea, the indigestion of children, infantile diarrhoea, diphtheria, epilepsy, intussusception, pertussis, broncho-pneumonia, and tuberculosis.

The article on diphtheria by Dr. Chapin, is a very careful review of the advances made in our knowledge of that very important disease. It must be said that the additions to our knowl-



edge of that disease during the past year were not great. The most important scientific contribution on the subject of treatment was, unquestionably, the report of the American Pediatric Society.

Dr. Caillé contributes an admirable article of four pages upon the present status of lumbar puncture. His conclusions regarding the operation are summed up as follows : "It may be stated that lumbar puncture is very valuable as a diagnostic means in suspected intra-ventricular hemorrhage, or hemorrhage within the spinal canal, and in inflammatory affections of the meninges. It is a palliative measure in increased brain pressure and should be further tried with the view of establishing direct medication."

An article by Dr. Shuttleworth on mentally deficient children is, also, worthy of particular notice. The writer considers both the medicinal treatment and the training of such children. The thyroid treatment is efficacious in cases of the cretinoid type but is of little avail in other cases. Co-education with normal children though theoretically plausible, the author believes to be impracticable. The spirit of emulation, so valuable for progress, can be best encouraged by competition with compeers. Special classes, therefore, are necessary for the successful training of mentally deficient children.

The treatment of scoliosis is discussed by Dr. Kiliani in a most original and striking paper. He attempts to correct the abnormal position by transforming the scoliotic curvature into the opposite curve by bicycle exercise through properly adjusted seat and handle bars. Bicycle exercise constitutes such a perfect combination of active and passive motion that the possibilities of such a mode of treatment certainly seem great. By means of a bicycle in which either side of the handle bars can be placed at any position desired, the author seems to show that the curves of scoliosis can be readily overcome. The subject is one worthy of further careful study.

The departments devoted to sanitary science and to new inventions, are, as usual, complete and satisfactory. The present volume fully confirms the opinion before expressed regarding this excellent work, that the great number of subjects considered, the vast amount of literature reviewed, the conciseness yet completeness of the work, render it by all means the most valuable year book at the command of the practitioner.

## Society Reports.

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### NEW YORK ACADEMY OF MEDICINE—SECTION ON PEDIATRICS.

Stated Meeting, March 11, 1897.

J. HENRY FRUITNIGHT, M.D., CHAIRMAN.

#### MALIGNANT GROWTH OF THE LIVER IN AN INFANT.

DR. WILLIAM L. STOWELL exhibited a tumor of the liver that had been removed from a child of nine and a half months. According to the history, an abdominal tumor had first been noticed about a month ago, and had been thought to be an enlarged spleen. It filled the left side of the abdomen, and was more or less nodulated. About the same time, a tumor containing large cells and bloody fluid, developed at the lower angle of the jaw. The urine contained albumen and waxy casts. At the autopsy no ascites was found. The abdominal tumor was found to be an enormously enlarged liver, weighing two and a half pounds. The left lobe was three times as large as the right, and consisted of a new growth. Microscopical examination showed this to be a fibro-sarcoma. The speaker said that he had only found ten cases of sarcoma of the liver in young children reported, the youngest of these being in an infant of three weeks.

DR. WALTER LESTER CARR said that he had only seen one such case. While it was the rule for ascites to be absent, it had been noted in one or two of the reported cases.

#### CONGENITAL DEFECT OF THE HEART.

DR. C. E. NAMMACK presented a woman, twenty-six years of age, who had been a "blue baby." She became markedly cyanosed on the slightest provocation; her stature was stunted, and the finger nails incurvated. Her respirations rarely fall below twenty. Dr. Nammack said that she probably had the following lesions: (1) A stenosis of the pulmonary orifice, as shown by the hypertrophy of the left ventricle, the diffused cardiac impulse, and the presence of a thrill and systolic murmur in the second left intercostal space; (2) a defect in the inter-ventricular

septum, as indicated by a loud systolic murmur, heard with greatest intensity at the apex, and transmitted to the back; and (3) a patulous ductus arteriosus, as indicated by a murmur at the upper part of the sternum, and by an accentuation of the pulmonary sound. In her case, the prognosis as regards duration of life was better than usual. Statistics showed that 16 per cent. survive the twentieth year.

DR. C. L. DANA called attention to another and rare congenital defect in this patient—*i.e.*, a bifid uvula.

#### A CASE OF ATAXIA.

DR. MARY PUTNAM JACOBI, under this general heading, gave a detailed history of an interesting case of ataxia of obscure origin, and exhibited the patient. The latter was a girl of eleven years, and was the second of a family of three girls. The other two were congenital idiots. The parents were first cousins. The girl's illness began in April, 1896, with high fever, followed in three days by stiffness of the neck, diplopia, shooting pains all over the body, and frequent vomiting. There was no eruption. The fever lasted for several weeks, and left her greatly prostrated. The case was looked upon as one of cerebro-spinal meningitis. In August she had an attack of paroxysmal pain, unattended by fever. On December 9, 1896, she was admitted to the New York Infirmary for Women and Children. Examination showed the cervical spine to be rather stiff, and forward flexion of the head caused pain. The pupils contracted to accommodation, but only sluggishly to light. The hearing was impaired on the right side. The knee-jerks were entirely absent. The child suffered chiefly from moderate headache, persistent nausea, and slight vomiting, and on attempting to sit up, she would be seized with vertigo. Thinking the case to be one of cerebro-spinal meningitis, she was given five grains of iodide of potassium three times a day, and as the improvement was marked by December 18th, the daily dose was increased to thirty grains. On January 17th she felt so well that she was discharged. The following day she returned, complaining of great weakness, and it was then noticed that her gait was distinctly ataxic. The hamstring muscles were still rigid, and the knee jerks were absent. On January 25th it was found that the visual field was much contracted. The hamstring muscles were no longer rigid, but the knee-jerks were still absent. On January 27th the ophthalmo-



scope showed optic neuro-retinitis in both eyes. While the child was certainly emotional, she did not exhibit many of the usual features of hysteria. Within the last few days this girl had developed paroxysms of shooting pains, which started from the lower dorsal region, and following the ilio-hypogastric and ilio-inguinal nerves, radiated to the abdomen and vulva. These attacks lasted upwards of half an hour, and were associated with an irregular but moderate rise of temperature.

Dr. Jacobi, in summing up the points in diagnosis, said that there was a possibility of the case being one of Friedrich's disease in its incipency. Although the lesion at the present time was, in all probability, irritative in character, it was worthy of note that the knee-jerks had been persistently absent, instead of being exaggerated, as one would expect. In children the middle lobe was the favorite seat of tubercle. However, the ophthalmoscopic examination pointed rather to a process having its origin in a basilar meningitis than to a tumor. The fact that this illness had lasted about ten months, pointed rather to syphilis than to tubercle, and another fact in favor of the syphilitic nature of the disease was the very rapid and decided improvement that had followed the administration of the iodide of potassium.

DR. JOSEPH COLLINS said that he would at once exclude Friedrich's ataxia on one symptom—*i.e.*, the absence of the knee-jerks. He was of the opinion that the child had had a hydrocephalus, and was now suffering from a hydrocephaloid condition. The onset was characteristic of a tubercular meningitis or ependymitis. The inflammation of the ependyma was probably followed by an exudation, causing distension of the lateral ventricles, the aqueduct, and, possibly, also, the central canal. It seemed to him that this theory was the only one that would explain all of the symptoms.

DR. C. L. DANA said that he would exclude Friedrich's ataxia, not because of the absence of the knee-jerks, but because there did not seem to be a true ataxia present. The onset of the disease resembled a typical attack of cerebro-spinal meningitis, but had not been followed by the usual cranial nerve palsies. A thick convexity meningitis involving the posterior portion, and extending down towards the posterior fossa, would explain the symptoms. It was probable that there was also some hysteria, but he would incline to the diagnosis of syphilitic meningitis.

DR. B. SACHS, in examining the patient, found that there had

been a sudden return of the knee-jerks. He said that he would exclude Friedrich's ataxia. The optical changes and the ataxia did not seem to him sufficient to justify the diagnosis of cerebellar tumor. He would exclude tubercular meningitis because of the course and duration of the affection, and because only one cranial nerve was involved. He strongly suspected a syphilitic meningitis. Hysteria alone could not explain the course and symptoms presented by this girl.

DR. H. W. BERG remarked that it was not impossible that the condition was really one of hysteria, and that the optic neuritis was an independent, but co-existent condition.

DR. JACOBI, in closing, expressed surprise that the knee-jerks should have been present this evening, for they had been persistently absent at many examinations since last December. She would exclude cerebellar ataxia and hydrocephalus, because of the absence of mental deterioration.

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**Fever.**—In the discussion on fever in the Fourteenth Congress for Internal Medicine (*Centralbl. f. inn. Med.*), Unverricht mentioned that there were two theories of fever: (1) that of Liebermeister, who would look upon the raised temperature as producing the other symptoms of fever, and (2) the view that fever is a complex of symptoms, in which temperature plays an important part, but does not cause the other symptoms. Unverricht believes that the symptoms of fever do not depend on the temperature, but on the nature of the cause of the fever, and especially upon the toxic products circulating in the blood in infective processes. There is in all probability no single poison common to all the infective processes, such as the escape of febrin ferment in the blood. Other symptoms of fever may be present, without rise of temperature. V. Jaksch pointed out that besides the rise in temperature, metabolic changes were an important manifestation of fever. Antipyretic drugs were valuable, not because they were antipyretics, but because they were nerve tonics. Schill had never used antipyretics. Unverricht has always taught that the damage hitherto attributed to raised temperature has not been proved. Experiments on animals show that febrile temperature exercises an inhibitory action on the development of bacteria. Perhaps certain toxins form at higher temperatures new and harmless combinations.—*British Medical Journal*.

## THE PHILADELPHIA PEDIATRIC SOCIETY.

Meeting of March 9, 1897.

J. P. CROZER GRIFFITH, M.D., PRESIDENT.

DR. D. J. MILTON MILLER read a paper entitled  
HYPERPYREXIA AS A FATAL TERMINATION IN ENTERO-COLITIS, WITH  
REMARKS ON THE USE OF OPIUM IN THIS AND ALLIED  
AFFECTIONS. (SEE PAGE 347.)

### DISCUSSION.

DR. WILLIAM PEPPER.—I find myself in entire accord with the writer in regard to the process, which he has so judiciously stated. I do not think there can be found a more important, practical question. This type of case is so very common, and the demand for relief is so urgent, that it has become a routine practice to administer opium in some form in these conditions; indeed, we often find that it has been done by non-medical persons before we arrive at the bedside of the little patient. The existence of entero-colitis is by no means to be measured by the degree, nor its positive existence by the amount of discharges. There may be a very widespread irritation of the mucous membrane, not so much, perhaps, of the epithelial layers as of the follicles and of the nervous filaments, without the existence of copious or frequent discharges. We are not to estimate the gravity by the copiousness, frequency, or character of the discharges. Undoubtedly when the various lesions are combined, or when there is a great deal of blood in the discharges, it does indicate a serious grade of inflammation, but that entero-colitis may exist in a high degree with comparatively little discharge, I think is demonstrable. We must realize that the sources of danger here, as elsewhere, are manifold. I believe Dr. Miller has been absolutely right in calling attention to the frequent and potent influence of intestinal intoxication in the production of fever in these affections, and undoubtedly, in the cases of this type, there could be nothing more likely to aggravate the fever than to load the intestine with highly fermentible matter, and then to lock up the intestines so as to prevent the discharge of the offending materials. In that case we have the typical condi-



tion for the production, by progressive hyperpyrexia, of progressive poisoning resulting from auto-infection. It seems to me quite clear that there are cases here, as elsewhere, where the hyperpyrexia is dependent upon the action of the intense peripheral irritation upon the heat-controlling centres, and that the paresis of these centres, with the resulting hyperpyrexia, is quite explicable, as the effect of the widespread irritation of the nerve filaments of the mucous membrane, whether or not there be at the same time decomposing intestinal contents, and consequent poisoning.

These simple conditions have seemed to me to offer a simple guide as to the use of opium and the mode of dealing with hyperpyrexia. I am sure it has happened to you all, as it has often happened to me, to be called to a child, as Dr. Miller describes, and learn the history of high nervous disturbance, very possibly convulsions, and in the interval, stupor, with gritting of the teeth, with spasmodic conditions of the extremities; to learn that there have not been many discharges, but that these discharges have been of mucus, and perhaps blood-stained; to find rectal temperature high, the nose cold, and the temperature  $107^{\circ}$ . I have frequently found a cold bath in such cases to be followed by rapid reduction of temperature, subsidence of nervous symptoms, and such rapid control of intestinal symptoms as seemed scarcely conceivable with the grave condition from which the child had so recently emerged. I can see no other way of explaining such cases, because I have met with them where there were no evidences of impropriety in feeding, nor the retention of a large amount of fermenting matter; I have not been able to explain these cases otherwise than by a widespread, intense irritability of the intestinal nervous filaments in a susceptible child with ill-governed temperature, probably with weak and sensitive nerve centres and the easy paresis of inhibitory centres. It seems to me that in such a case opium would probably contribute to the fatal result. If a case of the kind reported is further aggravated by wrong feeding, and the gastro-intestinal canal becomes clogged with putrescent, poisoning matter, and if we deliberately lock up that mass by paralyzing peristalsis, I do not think it is too much to speak of opium as a fatal agent in such cases.

I think, on the other hand, we meet with cases where the story is very different, where there are evidences of much more

marked local irritation, much more active discharges, where the danger is of exhaustion from these discharges or alterations in the blood volume. In these cases it has seemed to me that opium has a valuable place, that a greatly restricted diet is useful, that applications of a slightly stimulant character to the periphery are useful. I agree entirely with Dr. Miller in the way in which the temperature should be treated. It has seemed to me that enemata of small doses of opium, in very small bulk, in some very soothing menstruum, were of the greatest possible service, and I think I have seen by this allaying of local irritation a gratifying reduction of temperature without resorting to the cold bath or to any antipyretics.

DR. GITHENS.—There is one class of cases in which I have used opium successfully by the mouth. The temperature is not high, but there are passages of green slime, the milk passing in white curds with not a particle of decomposition nor of auto-intoxication. In these cases I have used paregoric, associated with castor oil, so as not to check too quickly the discharges. As the passages contain curds of milk they show that the peristaltic action of the bowel is too rapid to allow time for digestion. I have given coloring matter to show how quickly they pass from the mouth to the rectum, and found it to be sometimes three, sometimes six hours. By this mode of treatment, normal action of the bowel is restored without constipation; the passages grow gradually larger, less frequent, and they soon regain their orange color.

DR. A. A. ESHNER.—There seems to be two points worthy of special emphasis in addition to the caution recommended in the employment of opium in cases like those reported. One of these consists in irrigation of the lower bowel to as large an extent as possible. To the water may be added non-toxic antiseptics, such as boric acid, menthol, sodium biborate, sodium bicarbonate and the like. The other point is the abstinence from foods susceptible of fermentation in the gastro-intestinal tract and possibly from all food for a short time. It is perfectly well-known that infants, as well as adults, may go for many hours without ordinary food—oftentimes with advantage. They must then receive sterile water, or albumin water, or barley water, or other bland preparations, at stated intervals.

DR. PRENDERGAST.—Last summer I used tannigen in about

twelve cases. It acted well. I found the best way was to give it plain, or with a little sugar. In combination with chocolate it developed an intense bitter taste.

DR. MILLER.—I am fully in accord with what Dr. Pepper has said in regard to the various origins of hyperpyrexias in these cases; still my own belief is that most of these cases are due to infection from the food, and that the proper treatment is to thoroughly empty the stomach and bowels and shut off fermentable food; then, if opium is given, to give it in very small doses. In one case the child went for five weeks without milk touching its lips, only egg albumin and beef juice, and recovered entirely, and is now a robust, strong boy. The child received very little opium. I used tannigen in the case which lasted so long and which Dr. Griffith saw with me. It ran into the chronic state, and tannigen was the only drug which seemed to stop the diarrhœa. In two or three acute cases I tried it without result.

DR. D. J. MILTON MILLER exhibited a water color of a case of pertussis, with extensive hemorrhages into the conjunctiva and tissues about the eye. The whole of the white of the eye was involved, so as not to be seen at all. The conjunctiva was ecchymotic, and the iris depressed. A rather curious phase was that the child did not have very many paroxysms, although they were excessively severe. She did not bleed from the mouth or nose nor did she vomit, but simply had hemorrhage into the conjunctiva. The disease yielded readily to antipyrin, so at the last visit the child had only one paroxysm in twenty-four hours, after having had about eight or ten.

Glandular fever was the subject of a paper read by Dr. S. M. HAMILL. After a brief abstract of Pfeiffer's original article, and a general review of the literature, he gave a description of the disease based upon the communications to literature. He described the condition as an acute infectious disease of sudden onset and short duration, developing in children without premonitory signs, and attended by mild fauceal redness, constipation, moderately high fever, rapid swelling and great tenderness of the cervical lymph glands lying beneath and posterior to the upper third of the sterno-cleido-mastoid muscle, which subside gradually and completely in from two to three weeks.

The bacteriological examinations have been few and incom-



plete, and consequently but little light has been thrown upon the nature of the infection. Comby and Gourichon, basing their opinions chiefly upon the result of Neumann's investigations, consider the streptococcus responsible. Czajkowski found the bacillus of influenza in all of his cases. His findings have never been confirmed, and as his cases occurred during an influenza epidemic, this demonstration was considered coincidental.

The nature of the infection is undecided. Dr. Hamill suggested a careful examination of the blood and tissues, owing to a certain analogy between this condition and the bubonic plague.

The author suggested a careful inspection of the skin, the teeth, and all available mucous membranes, in order to be sure that there is no known port of entrance for the infection.

The conditions with which glandular fever is likely to be confounded are simple acute adenitis, irregular forms of parotitis, and the symptomatic adenites, especially that accompanying the non-eruptive cases of scarlatina. Hemorrhagic nephritis is the most common and serious complication. It usually occurs very early. The prognosis is favorable, but two deaths having been recorded.

DR. HAMILL reported a very interesting case occurring in a boy of two years.

DR. DAVID REISMANN reported a case of glandular enlargement of the neck, which he had seen several months before, and now regarded as glandular fever.

DR. A. E. ROUSSEL said that he had seen four cases which in the main bore close connection to the subject. In looking over the different reports of the cases thus far, it had seemed to me that a great many other cases than those described by Pfeiffer have been included as glandular fever. For example in the cases reported by Neumann, some thirteen out of twenty-seven suppurated. In Mosson's cases, the glands of the neck were but slightly enlarged, there was dulness on percussion over different portions of chest, which served to point to catarrhal pneumonia. Many other cases were equally doubtful. It is possible that in the description of a new disease a certain amount of confusion must necessarily attend the description by different writers for the reason that the lines are laid down fast and distinct. The cases above referred to have already been published in detail.

DR. ALFRED STENGEL.—It seems to me that the point at the present time is not, how shall we diagnose glandular fever, but

the question is: Is there such a thing as glandular fever? I must confess that I am skeptical as to the existence of a distinct form of disease, a separate entity of this kind. That there is a group or complexus of symptoms, more or less striking, that we may call glandular fever is shown by the number of cases reported. I have now under my care a child with an enlarged gland at the posterior border of the sterno-cleido-mastoid muscle almost at its attachment above, and this child is in a house in which influenza has been rampant. This case, with some stretching, might be placed in the category of glandular fever.

In considering the patholoigcal conditions which might explain glandular fever, we may recognize, first of all, that inflammations of the glands are almost always the result of irritations proceeding from neighboring parts. The occurrence of a group of enlarged glands would, therefore, suggest a local origin of the irritation or infection. It would seem likely then, that in cases of what is termed glandular fever we are dealing with some form of infection or irritation of the nearby parts of the middle or external ear, or of the upper parts of the respiratory or digestive tract. It is not necessary that the irritation proceed at once to the glands that are enlarged. It is not probable that what is called glandular fever is, primarily, some mucous membrane disease, sometimes influenza, sometimes perhaps scarlatina, sometimes perhaps diphtheria, with secondary infection, perhaps most frequently streptococcic. Pfeiffer's observations establish, it seems to me, a very slim foundation for a new disease. I am aware, of course, that the occurrence of groups of cases or epidemics in which this symptom complex constantly recurred, would establish a strong presumptive evidence in favor of a new and special form of infection.

DR. JOSEPH SAILER.—It seems to me that the burden of proof rests with those who look upon this as secondary to some of the other exanthemata. The streptococcus is perfectly capable of producing an independent disease. It causes erysipelas, and there is no necessity for supposing that some other organism has attacked the throat first, and thus permitted the streptococcus to get in. I cannot agree, that bacteriological literature is entirely against the homology of this type. It is possible to vary culture media so as to obtain large or small individuals, to increase or decrease the virulence, to obtain long or short chains, all these being derived from a single original culture.

DR. A. A. ESHNER.—I should like to ask whether or not studies of the blood have been made bearing upon the corpuscular elements, particularly as regards their number and relations among one another, and also if histologic studies have been made in cases in which the glands had broken down.

DR. HAMILL.—I can simply say that in the two fatal cases reported no post-mortems were made, and only blood examinations have been made by Czajkowski. He made bacteriological examinations of the blood, and discovered the influenza bacillus. There are, undoubtedly, a great many cases in the literature reported as glandular fever which really are not, and I think that Neumann has been condemned for classifying many of his cases as glandular fever. The existence of nephritis seems to be a peculiarly frequent occurrence in this disease. In all cases reported the involvement of the kidney has been early. When I began the study of this subject, I was doubtful of the existence of glandular fever, and still feel that we may question it. However, I am very much more converted to the belief than before I looked into the subject.

When I first saw this case I was unable to classify it. It did not seem to answer to the condition known as simple acute adenitis. In drifting about through the literature for some more satisfactory explanation, I came across the description of glandular fever, and was convinced that the case in question answered very closely to the description given.

DR. JOSEPH SAILER reported the case of a child that died at the age of fourteen days. There were no symptoms before death. Dr. A. E. Taylor and Dr. Sailer at the autopsy found slight ecchymosis in the pericardium, all other organs being perfectly normal, with the exception of the mitral valve, on the under surface of which were half a dozen small vegetations which looked as though they might be septic.

DR. J. H. JOPSON reported a case of endocarditis in the newborn. Male infant, colored, aged two weeks, apparently healthy at birth. Umbilical cord separated on the eleventh day and two days later a bloody discharge was noticed coming from the umbilicus, and the child seemed ill. When brought under observation on the following day, the patient was in a state of profound septic intoxication. There was a very offensive, bloody discharge from the umbilicus, into which a probe passed for a



quarter of an inch. A short time before, there had been a passage of blood from the rectum. The child died the next day. The autopsy showed cloudy swelling of the liver, kidneys and spleen, and hemorrhagic infarcts in the lungs. On the opposing edges of the tricuspid and mitral valves was a number of small vegetations which on section were found to contain micrococci. The pulmonary and aortic valves were normal.

DR. TAYLOR also reported a case of thrombosis of the pulmonary artery. The specimens were taken from an infant which died at the age of ten days. At birth it seemed healthy, but on the seventh day it was attacked with fever, dyspnœa and cyanosis and died in extreme cyanosis two days later. The autopsy was made two hours after death. The navel and cord were clean and normal. There were hemorrhages into the lungs, lymph glands, liver, spleen and kidneys. The pulmonary artery was entirely occluded by a firm thrombus. There was no endocarditis. Sections of the thrombus and of the various organs failed to reveal any bacteria. They did show universal fibrosis with proliferative periarteritis, round-celled infiltration and interstitial hemorrhages. These changes were to be attributed to congenital syphilis and the case was probably an anomalous member of the group termed syphilis hemorrhagica neonatorum.

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**Pseudo=Meningitis After Influenza.**—The case of a boy, aged fifteen, who had a severe attack of influenza in the spring of 1895, and again in November, is reported by Tecce (*Rif. Méd.*) The second attack set in suddenly while the boy was in the best of health. The temperature fell in two days, and the boy returned to work, but complained of headache. On the fourth day he fell down, lost consciousness, and was convulsed. The headache continued and was intense, and the patient became comatose. There was no delirium. Convulsions, with contraction of the upper limbs, rigidity of the lower limbs, and slight contraction of the neck muscles, were present. The pupils, urination, and defæcation were normal throughout. The abdomen was depressed, and there was hyperæsthesia of the vertebral column, and especially in the calves of the legs. The temperature was never very high. The pulse was rather slow. After about twenty days of treatment by cold to the head and calomel internally, the boy completely recovered, and has remained well since. There was no manifestation of tubercle in the child.—*Canadian Practitioner*.

## Current Literature.

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### HYGIENE AND THERAPEUTICS.

**Eross : The Treatment of Whooping Cough.** (*Jahrbuch f. Kinderheilkunde.* B. xlii., H. iii., iv.)

The author's observations were made in 874 cases; 832 were out-door patients, the remainder were seen in private practice.

The majority of the children were over two years of age. Fifty-two were nurslings. The internal medication comprised the use of bromide of potash, tincture of belladonna, codeine, quinine, antipyrine, phenacetine, antifebrine, and bromoform. Resina benjols was insufflated into the nose. In the majority of cases the treatment was begun when the paroxysmal stage was at its height.

Bromide of potash and tincture of belladonna produced the least benefit. Quinine in some cases worked well: that is, when it could be given long enough and in sufficient doses. Small children refused to take it. It also acted unfavorably on the general well-being of the child, and the appetite under its use diminished. Of far greater value were antipyrine, antifebrine, and phenacetine, which were used in several hundred cases. The drugs were given in syrup, coffee, or water. Unfavorable results, such as depression and prostration, never followed the administration of any of the coal-tar preparations. Phenacetine seemed to possess the least value, but from twelve to fifteen per cent. of the patients showed signal improvement under its use. Antipyrine gave the most favorable results. Thirty-five per cent. of the cases showed marked improvement.

None of the remedies mentioned above produced such an immediate change for the better, in convulsive attacks, as bromoform. Under its use vomiting and other complications were almost unknown. The convulsive character subsided almost entirely. The beneficial effects were noted in from forty-eight to seventy-two hours.

The insufflation of resina benjols gave the best results of all the remedies used. In sixty per cent. there was a marked improvement in the severity of the paroxysms, with a shortening of the course.

The beneficial effects were chiefly noted in diminishing the number of the paroxysms, the severity was controlled in a lesser degree. When no improvement follows four or five days' use of the insufflations, it is best to discontinue the treatment. The powder must be blown not only into the nose but into the pharynx as well.

**Chassevant: The Absorption of Iron and its Relation to the Blood.** (*Presse Medicale.* 1897. *New York Medical Journal.* Vol. lxx. No. 10.)

M. Cloetta has made some experiments in regard to the elimination of iron in the economy (*Archiv. für experimentelle Pathologie und Pharmakologie.*) For this purpose he used ferratin, which exercises no caustic action on the tissues. His experiments demonstrated that, in dogs which were subjected to a milk diet, the iron injected into their veins in the form of ferratin was eliminated by the large intestines. Quincke had also ascertained this by micro-chemical examination. The author also investigated the means of assimilation of this element when administered by the digestive tract, and he found that twenty per cent. of a dose introduced into the stomach of a dog subjected to a milk diet was absorbed.

According to M. Cloetta, the organic combination of iron with albuminoid matter is necessary in order to insure its absorption. For instance, two dogs were experimented upon as follows: Their food consisted of a soup made of starch, sugar, glucose and distilled water. To the nourishment of the first dog a solution of iron chloride representing sixty milligrammes of iron was added; to that of the second dog, a solution of ferratin representing forty milligrammes of iron. The villousities of the dog to which the latter had been given presented the characteristic action of the iron absorbed. The iron contained in the intestine of the other dog was not absorbed and formed masses at the base of the villousities. The organic iron combined with albuminoids is evidently absorbed in the intestine, penetrates the chyle, and enters the circulation by the mesenteric veins.

Experiments made by Cloetta with new-born dogs demonstrated that the presence of iron salts in the food was not immaterial to the formation of hæmoglobin, that there was no absorption of iron salts, and that the liver seemed to regulate absorption in the same way as it did glycogenesis.



**Shaw, John C. : Cretinoid Myxœdema and its Treatment by Thyroid Gland.** (*Brooklyn Medical Journal.* 1897. Vol. xi. No. 1.)

The first description of sporadic cretinism was published by Curling in 1850. In 1871, Hilton Fagg gave a fuller account of the disease, and recognized the resemblance between sporadic cretinism and endemic cretinism, a condition which had been known for a great many years. Fagg's description was so accurate that not much has since been added; he also spoke of the wasting of the thyroid body, "if that should prove to be a constant character of the disease." The similar condition found in the adult was first publicly described by Sir William Gull in 1873, in an article entitled "On a Cretinoid State Supervening in Adult Life in Women," the condition now known as myxœdema. Later, in 1877, an exhaustive study of the disease, as observed in the adult, was made by Ord, and the name myxœdema suggested by him, because in one of his cases a large quantity of mucin was found in the subcutaneous tissue. Kocher observed that total extirpation of the thyroid gland caused a condition similar to myxœdema in the adult, and which he called cachexia strumipriva. In Ord's study of the disease, the relationship between myxœdema in the adult, cretinoid myxœdema, and cachexia strumipriva was made apparent.

The studies of Ord, Horsley, Semon and others, have done much to advance our knowledge of the disease. The resemblance between myxœdema in man, and the condition produced in animals by the removal of their thyroids, was the incentive to Professor Horsley's experiments, which were almost demonstrative of the relationship between cachexia strumipriva and myxœdema. Schiff and others showed that the effects of removal of the thyroid gland in animals could be modified by transplanting the thyroid glands. These observations induced Horsley to suggest transplanting thyroid glands in the bodies of man suffering from myxœdema. Amelioration was produced by this procedure, but the glands were absorbed; besides the unpleasantness and possible risk in such a method. A glycerin-extract of the thyroid gland was next used on animals, after thyroidec-tomy, and the favorable results led Brown-Séquard to suggest that it might be useful in the myxœdema of man.

Dr. Murry, of Newcastle, England, appears to have been

among the first, if not the first, to use the method. The difficulty in making an extract that would be stable, and the objection patients had to the hypodermic injection of the remedy, soon led to a trial, first of the cooked glands of sheep, and later to the dried and powdered gland, by Hector MacKenzie.

Four cases are reported by the author, their histories being given in detail. From his experience in these cases, as well as that of others, he believes the thyroid treatment to be a triumph for medical science and experimental medicine.

In regard to the relationship of Graves' disease and myxœdema, it is believed that the thyroid is the seat of the disease in both, because the thyroid is often enlarged in Graves' disease; in myxœdema the gland is either absent or diseased, so that it does not throw into the circulation a substance which is necessary to health; in Graves' disease, that it throws too much of this substance into the lymphatic circulation.

The gland is at present administered as a desiccated powder; as tablets and tabloids; also a glycerin-extract; occasionally as cooked fresh glands. The sheep's thyroid is always used; when the glycerin-extract is employed, it is given hypodermically in about fifteen minims at a dose, every other day, or less often. To continue the effect, Dr. Murry, who instituted the treatment, gives one injection of twenty minims every two weeks. Care is to be observed in the administration of the thyroid, as death has been known to result from its use.

The author believes that the dose given has often been too large. In his opinion it is far better to begin with small doses three or four times a week, than to give too large doses. His most successful case received but five grains of desiccated thyroid twice a week, the amount being reduced to half that quantity in the later treatment. He believes that in most of these cases the use of the gland will be necessary at intervals to insure continued health.

**Lopez, Joseph H.: The Treatment of Diphtheria with Antitoxin.** (*Medical News*, 1897. Vol. lxx. No. 6.)

The author describes briefly the methods now adopted for producing antitoxin, and refers to the fact that to fully understand the treatment it is necessary to have a clear conception of five terms. These are: *germs*, *toxins*, *serum*, *antitoxin*, and *units*. They must be clearly distinguished, one from the other.

Antitoxin (upon which alone depends the efficacy of the remedy) is one thing, and serum (its vehicle or menstruum) is another. Antitoxin does not exist in the blood of the horse until it receives the treatment.

The germ of diphtheria is the specific cause of the disease, while the toxin is a complex poison produced by the germs. If germs of diphtheria are injected into a susceptible animal, they will produce diphtheria; if toxins are injected, they will cause acute poisoning. The toxins only are used in treating the horse that is to yield the antitoxin. The toxins, separated by the process of filtering, must conform to a certain standard of virulence or be rejected. This standard is obtained by experimenting on guinea-pigs.

If a moderately large dose of toxin were injected for the first time into a horse, it would sicken and die. The initial dose, however, is made very small. This dose is gradually increased and repeated at intervals of six or eight days, for about three months. At the close of the period of treatment, when a trial bleeding is made, he will receive an injection more than three hundred times as large as the first one with impunity. If the trial bleeding shows the presence of sufficiently large quantities of antitoxin, the animal is freely bled and the serum separated. When this is carefully preserved against putrefaction and other bacterial contamination, and the unit strength ascertained, the remedy is ready for use.

In the treatment of diphtheria the most important step is to make an early diagnosis, and the next is to give antitoxin in sufficiently large doses as soon as the diagnosis is made. In the laboratory the curative dose required to save a guinea-pig is determined by mathematics. Both the quantity and the virulence of the diphtheria toxin floating in the blood current of the animals are accurately known. From these factors the bacteriologist readily determines the number of immunizing units needed to save the animal. In clinical practice the physician has no power to determine either the amount or the virulence of the toxin absorbed into the system; he must therefore make the nearest estimate possible.

The author reports thirty-seven cases of diphtheria treated with antitoxin, with three deaths. These occurred in one of the asylums, in cachectic children, closely following a grave type of measles. These did not seem to be affected by the antitoxin,



but rapidly progressed to a fatal termination. In the other cases a general amelioration of all the symptoms was noted early, and the progress to recovery was both speedy and complete.

The author refers especially to the importance of using a reliable preparation of antitoxin. His own experience has been restricted to American antitoxin. He has used the Mulford preparation with especial satisfaction, particularly the most recent, highly concentrated serum, which removes many of the objections to the serum treatment due to the large quantity which must be injected.

### SURGERY.

**Richmond, Nelson G.:** **Acute Non-Tubercular Epiphysitis in Children.** (*Buffalo Medical Journal.* 1896. Vol. xxxvi. No. 3.)

Acute epiphysitis is an inflammation of the epiphyseal ends of bones before they are united to the shaft or diaphysis. It is a very rare and fatal disease. The author describes a case of this rare condition, and reports extensively from literature.

The disease most commonly attacks the head of the femur, the upper end of the tibia, or the lower end of the femur. The cause has been described in only two or three instances. In these it was traumatic. The disease begins as an acute congestion of the blood-vessels of the epiphysis, quickly resulting in inflammation and pus. The pus may quickly involve the joint, even by a pinhole opening, and is the more likely from its proximity, the cartilaginous structure of the epiphysis, and the fact that the epiphysis, in infancy, is incorporated in the synovial sheath.

The pus, without invading the joint, or even after it has occurred, may burrow under the periosteum and break through at some distant point. Or it may involve the diaphysis, or some neighboring joint; or it may be absorbed into the general system, resulting in peritonitis and meningitis. The staphylococcus aureus and albus have been demonstrated in bones affected with this disease, and it is probably due to these microbes that the general invasion and sepsis occur. Necrosis of the epiphysis quickly follows this destructive change. If the child survives the attack, deformities and subluxation usually result; rarely ankylosis, in those cases where the joint has been involved.

The epiphysis has been explained as the starting point of the

disease, as it is here that the centres of ossification are the most vascular. Thus far investigation seems to show that the pathology is the same as that of acute osteomyelitis, though some believe it to be an acute infectious osteomyelitis, and others still, that it is a pyæmia of bone. The disease runs a rapid course. Cases have proved fatal in a week. Often an abscess forms and opens within this time. The symptoms ushering in the disease are fever and restlessness, pain on being moved, and swelling of the joint. There is flexion of the affected limb. The disease with which it is most likely to be confused is acute articular rheumatism. Epiphysitis is more apt to involve one joint; is less migratory; is more rapid in its course, and in case of supuration the skin could be expected to assume a darker color. The differentiation will probably have been made before pyæmic complications arise.

The successful treatment of this disease depends upon an early diagnosis. The constitutional treatment is such as would present itself to any intelligent practitioner.

The real treatment is surgical. A free incision should be made down to the bone, the periosteum slit, and the bone or cartilage freely opened. Free drainage is the thing to be attained; hot bichloride dressings are the best to maintain it. This incision should be made early. A delay of twenty-four hours may mean the involvement of a joint. The nidus may be in the periosteum, or underneath the epiphyseal substance, or in the diaphyseal side; but the nearness to the joint, the epiphysis being included in the synovial sheath, and the cartilaginous character of it, make it absolutely essential to establish free drainage if the joint is to be saved.

The necessity for early action appeared in the case cited. The opening above the knee apparently gave rise to all the subsequent trouble. The incision below the knee, which was made early, was very tractable. The author believes that we are justified in maintaining that (1) there is an acute epiphysitis in infants of a non-tubercular form; (2) that there is a tubercular, also a syphilitic form, both hereditary, in infancy and childhood; (3) that epiphysitis is a rare disease in infancy, and a more common disease in childhood; (4) that both the tubercular and non-tubercular forms are more common in hospital than in private practice; (5) that undoubtedly many cases of arthritis are primary epiphysitis.

**Haynes, Irving S.: Diagnosis of Disease of the Hip Joint.**  
(*New York State Medical Reporter.* 1896. Vol. iii. No. 8.)

In hip joint disease there is usually a tubercular history in the family, and a pretubercular stage present. The disease begins insidiously, develops slowly, and presents the symptoms of a low grade of inflammation, subject to exacerbations resulting from increased irritation from undue use of the joint, or changes in the weather. Pain is almost never felt in the joint itself, but on the inner side of the knee, leg, or ankle. A limp, not marked, not constant, but coming and going at first, but later becoming established, is significant of tubercular disease. Atrophy appears early and may be the only positive sign at the first examination. Err on the safe side and watch such a case. Muscular spasm is also an early symptom. It may not be marked, may limit the motions in only one or two directions, but when present is a sure indication of hip joint disease.

**Power, D'Arcy: The Surgical Treatment of Hydrocephalus.**  
(*International Clinics.* Fifth Series. Vol. iii.)

Hydrocephalus, like ascites, is one of the medical terms which has been handed down to us from classical times. It is a symptom, and often an important symptom, of a variety of pathological conditions, and with the advance of pathological science it is gradually disappearing from the nomenclature of the scientific practitioner. Hydrocephalus as it is seen in children, occurs in a simple form, including the majority of the congenital and chronic cases, and in an infective form comprising nearly all the acute and subacute cases. Hydrocephalus in its widest sense is an increased secretion of cerebro-spinal fluid, either into the ventricles of the brain alone, more rarely into the subarachnoid space alone, or, as most often happens, into both the subarachnoid space and the ventricles of the brain. The effusion is either slow and passive, or it is rapid and due to irritation. It is always serous, though it is often associated with plastic deposits. Little or nothing is known of the pathology of the congenital form. It may be associated with other developmental errors, either of the body generally or of the cerebro-spinal system in particular.

The author reports six cases treated by puncture or drainage, the results not being very encouraging. He believes that there



are only a small minority of cases of hydrocephalus in which drainage is likely to be of service. Such cases are those in which the effusion comes on slowly, without any assignable cause; and in these cases it would appear as if simple puncture were sometimes sufficient to effect a cure. Secondly, those cases in which the effusion is due to the action of micro-organisms which have no chemotactic properties—that is to say, have no power of causing plastic deposits by leading to an increased exudation of leucocytes. We are as yet unable to diagnose such cases, but, inasmuch as they certainly occur, we are justified in operating in those cases of meningitis with effusion which have not already progressed too far. We may save life; we shall certainly not destroy it, for the operation *per se* is not dangerous.

**Robinson, H. Betham: Syphilitic Joint Disease in Children.**  
(*British Medical Journal*, 1896. No. 1846.)

The effect of syphilis on the joint structures has received rather scant treatment from surgical writers. In most of the ordinary text-books the lesions produced are dismissed very briefly, and by the student this affection is spoken about as if its occurrence were very rare. On the contrary, as time goes on and more attention is directed to accuracy in diagnosis, no doubt many cases which are now considered tuberculous and anomalous forms of rheumatoid arthritis, will be relegated to their proper category. It is advisable, then, that the reports of such cases should be brought to light, so that not only will the frequency of these joint lesions be appreciated, but we shall be able to note the pathological subdivisions in which they may be placed.

In 1892, Mr. Jonathan Hutchinson, Jr., delivered a very interesting address on the subject, and pointed out definitely the different pathological headings under which such cases should be grouped.

With trifling exceptions, the same pathological grouping holds good whether the cases are due to acquired or congenital syphilis. In both origins of the disease, we presumably have analogous pathological forms.

Congenital syphilis claims one or two forms especially as its own. Many cases in older children may be due to either the hereditary or acquired disease. A classification of the joint disease in children may be made on the following lines:

1. Epiphysitis of infants.

2. Symmetrical effusions, usually from 8 to 15 years of age.

The above two forms are essentially associated with the congenital disease.

3. Osteitis (*a*) with simple effusion; (*b*) with gummatous infiltration of the synovial membrane and effusion.

4. Primary gummatous synovitis.

These forms are met with whether the disease be inherited or acquired.

Peribursal gummata, so frequent in adults round the patella and olecranon bursæ, the author has not met with in children, nor has he been able to locate in children that rare pathological form, the chondro-arthritis described by Virchow, of which some admirable examples from adults have recently been exhibited.

Epiphysitis of infants is the earliest manifestation of syphilitic disease of bones and joints, the epiphysis being first involved and almost immediately being attended by effusion into the neighboring joint. The disease develops rapidly, and is accompanied by well-marked signs of inflammation. The affected limb seems to lose all power, and for this the child may be brought to your notice—pseudo-paralysis. There is a tendency for the epiphysis to become loosened, but with treatment fixation again takes place, in most cases apparently without any subsequent alteration to the length of limb. As a rule, the synovial membrane does not suffer much change, the fluid becoming absorbed, leaving the joint undamaged or with trivial adhesions.

## MEDICINE.

**MacKenzie, G. Hunter: Papillomata of the Larynx in Children.** (*British Medical Journal.* 1896. No. 1863.)

Papillomata are the most frequent variety of neoplasms found in the larynges of children. Morell Mackenzie says that they occur in the larynx at an earlier period of life than the other kinds of tumor, nearly all cases found in the first decennial period being papillomatous. They may be congenital, may occur after the exanthemata, or may develop without apparent exciting cause other than simple catarrh. Lennox Browne is inclined to believe that adenoid growths and similar affections of the nasopharynx may sometimes be a factor in their production, probably through the medium of the laryngeal catarrh induced by them.

A single papilloma may be present, but it is more usual to find several, and in extreme cases the whole larynx may be filled with them. Kanthack has recorded a case of diffuse papillomatous hypertrophy of the laryngeal mucous membrane in a child; and Schaller notes the case of a boy, aged eight years, in whom *post-mortem* examination showed papillomatous degeneration, not only of the whole of the laryngeal mucous membrane, but also of the tracheal as far as the bifurcation.

In considering the treatment to be followed in such cases, the main questions are: (1) Should a radical operation, that is, an operation for the direct and immediate removal of the growths, be performed: or (2) should it be an operation merely for the relief of the breathing?

1. The radical operations are thyrotomy, with or without a preliminary tracheotomy, and endolaryngeal removal, the child in the latter instance either being put under a general anæsthetic or forcibly held (voluntary submission is rare), while the papillomata are removed *per vias naturales*. In this connection it is important to bear in mind the great tendency to recurrence on the part of these growths. Morell Mackenzie asserts that on removal they usually recur in one or two months. Repeated recurrence, in fact, seems to be the rule. Thus Austin Lendon records a case in which thyrotomy was three times necessary in one child, and in another, a boy, aged four years (Dr. Clubbe) this operation was performed seventeen times in three years, and only after the last performance did the papillomata begin to finally vanish. Most surgeons will consider this operative zeal as quite unjustifiable. Wilkinson has reported the case of a boy, aged four years, who had been twice thyrotomized and thrice tracheotomized within seven months, and at the time of reporting the child was on the eve of his third thyrotomy.

This marked tendency to recurrence after thyrotomy, along with the immediate risks to the child, and also, as pointed out by Semon, in regard to the vocal defects and the stenosis that may ensue, should make us hesitate before performing this operation in such cases. He would even put it more strongly, and say that the operation is distinctly contraindicated.

As regards endolaryngeal removal, the results seem to be hardly more favorable, although Morell Mackenzie has recorded two cases, aged four and six years, who were cured of their



papillomata by evulsion with tube forceps, and other isolated examples are met with.

The author does not approve of intubation in such cases, although several favorable cases have been reported. He approves of tracheotomy, not only as a palliative or relief of the breathing, but as a radical measure for removal of the growth. These growths show a remarkable tendency after tracheotomy, to spontaneous disappearance. The length of time during which the cannula requires to be worn varies greatly. In the author's experience it had varied from six months to one year.

**Lohrstorfer, F.: Papilloma of Larynx in a Child.** (*Medical Record.* 1896. Vol. I. No. 15.)

The patient was three years of age and had shown symptoms of difficult breathing for ten months. These symptoms increasing, intubation was performed. The tube was several times hawked out and reinserted. Fearing injury to the larynx, it was finally removed and tracheotomy was done. The author had intended to perform an operation for the radical removal of the obstruction on the following day, but in the night the child was suddenly seized with dyspnœa and died in less than one minute, probably from the obstruction in the cannula, although both inner and outer tubes were removed in succession by the attendants. The autopsy, twelve hours later, showed a broad-based papilloma entirely encircling the interior of the larynx at the level of the vocal cords and completely blocking the passage. In spite of the last intubation tube remaining in three weeks, there was not the slightest trace of irritation of the larynx or trachea.

**Martin, W. L.: Scarlet Fever.** (*Medical and Surgical Reporter.* 1896. Vol. lxxiii. No. 10.)

The author summarizes the experience of forty years' observation of scarlet fever. The most prominent symptom he regards as the high pulse. He believes that the contagious element of scarlet fever lies in the desquamative, bran-like scales from the surface of the body, together with the salivary secretion and the excretions of the bowels. Scarlet fever, therefore, is a disease that cannot infect by inhalation, but the very light, desquamative substance thrown off from the surface of the body may float through the air of the room and light upon some part

of the person and thence be carried to the mouth. This is mainly the way it is transferred from person to person. If the salivary secretion and the bowel excretions are properly taken care of, there is no danger from this source. If before desquamation begins, the body be thoroughly rubbed with oil the scaling off of the skin will be largely prevented, the itching and burning sensations will be alleviated, and the danger of contagion vastly reduced. The room also will scarcely become infected. Sponge baths frequently administered add to the comfort of the patient by reducing the temperature and also lessen the danger resulting from desquamation.

**Nicholls, Albert G.: Arthritis Deformans in Young Children.** (*Montreal Medical Journal.* 1896. Vol. xxv. No. 2.)

Cases of arthritis deformans in children under ten years of age appear to be very rare. Strümpell, in his text-book of medicine, mentions that he has only met with a few cases between the ages of ten and fifteen. Osler mentions having seen only four cases in children under twelve in five years' experience. Recently, in the ARCHIVES OF PEDIATRICS, Koplik has reported a typical case in a child of seven. The cases here reported were both in the Royal Victoria Hospital in Dr. Stewart's wards. The second case, a child aged six, is very striking, as the joint involvement began at the early age of two years.

CASE 1.—Mary C., age 9 years. Always healthy, with the exception of an attack of whooping-cough three years previously. No history of any similar affection or chronic disease in the family. The history obtained was that the child first began to suffer about one year previously. The first thing noticed was a scaly eruption upon the chest, limbs and back (psoriasis). Almost at the same time the child complained of cold extremities, with stiffness of the fingers. On attempting to walk she complained that her ankle was painful. Later on she felt severe pain and stiffness in both shoulders. The pain was not constant, but was exacerbated during change of weather. The stiffness of the joints, however, persisted and gradually got worse. The child also lost flesh. On admission the physical examination was as follows:

Patient slightly emaciated, not specially anæmic. Temperature, 97.2°; pulse, 90; respiration, 24. Complained of slight

fleeting pains in the limbs when she walked. Cardiac dulness reached on the left to a point one-half an inch outside the nipple line in the fifth space. First sound at apex was accompanied by a soft, blowing, systolic murmur, which was transmitted towards the sternum. Pulmonary second somewhat accentuated. The hands were claw-like, owing to the inability of the patient to extend the terminal phalanges of the fingers. All the joints of the fingers were prominent and enlarged, being of a pearly white color. The second metacarpal bones of each hand were enlarged and prominent. There was wasting of the interossei. On the tendons of the flexor carpo radialis and palmaris longus of the left arm were about a dozen nodes about the size of a hemp seed. On the lower extremities both internal malleoli were considerably enlarged and the tarsi thickened. Slight enlargement of the proximal end of the first phalanx of the left third toe. There was slight stiffness about the shoulders, but no obvious deformity. There was no redness or heat about the affected joints, but they were painful on movement. There was an eruption of psoriasis about the extensor surfaces of the knees and elbows, also about the ears and nose.

During the time she was under observation the temperature was, on the whole, slightly above the normal, and the pulse averaged about 90. The case was unaffected by treatment.

CASE II.—Christina H., aged six; admitted on March 3, 1896. In this case there was a strong, tubercular family history. The history was that when the child was two years old she began to suffer with pain in the left knee, which gradually became enlarged. A little later the joints of the fingers became painful and swollen. One year later the right knee became enlarged, the other joints remaining as before. The pain and swelling varied in intensity from time to time. When five and a half years old, swelling and pain in both ankles were noticed, and a little later still the child began to complain of pain in the wrist and in the left shoulder.

On admission the patient was found to be a small, poorly-nourished child. Moderately anæmic. Lungs normal, heart normal. Very marked rheumatoid lesions were present. All the articulations in the middle and ring fingers of both hands were considerably enlarged. In the terminal phalanges, especially, there was distinct bony overgrowth, giving an appearance as of nodes. The metacarpo-phalangeal joints of the first



and second fingers of both hands were similarly enlarged. There was marked interosseal wasting. Distinct impairment of the power of extension of the left elbow-joint was noted, but there was no obvious deformity.

The left knee was much enlarged in every direction, there being evidence of effusion into the joint. The joint could be flexed and extended completely without crepitus or causing pain. The right knee was similarly affected, but to a much less extent. The muscles about the knee-joints were somewhat atrophied. There was also distinct prominence of the lower end of the left fibula, giving the ankle a full appearance. No pigmentation was anywhere noticed. While under observation she complained of no pain. There was considered to be a possibility of this being a case of tubercular arthritis when first seen, but the onset of the trouble, with the slow involvement of one joint after another, the symmetrical distribution of the lesions, the multiplicity of the joints affected, and the muscular atrophy, all rendered it certain that the case was to be placed in the category of chronic arthritis deformans. The character of the lesions themselves was perfectly typical of this disease.

**Richey, S. O.: Arthritis Deformans, and Its Relation to General Atrophy of the Conducting Apparatus of the Ear.** (*Transactions Ninth International Congress*. 1896. Vol. 3.)

Arthritis deformans may occur at almost any age; at first, in the most exercised small joints, and, if neglected, it will progressively attack every joint in the body. It would rarely be recognized in the ear before the age of thirty, when the true function of the ear begins to be impaired in the late stage of atrophy, though it might have existed from the age of four or five years, at which time it would have been in its inflammatory stage. This period of the affection would be marked by sudden onsets of pain of spasmodic or neuralgic character, causing at short intervals sharp, quick cries, followed by a period of ease and quiet. Though during the day there is entire comfort, the attacks are disposed to recur at night, the child sometimes waking from a sound sleep with a cry of distress, and falling to sleep again in a short time. These attacks of "earache" are supposed to be harmless because they do not result in suppuration, immediate deafness, or any other material change in function or structure, for they pass off after several hours of intermitting pain,

leaving some tenderness to touch, to recur again the next night, to follow much the same course.

These attacks differ in several particulars from the catarrhal affection resembling it, which causes almost continuous pain, thickening of the lining membrane, and increase of secretion, with bulging of the meatus on this account. Sometimes supuration occurs if the case is not promptly and properly handled; nearly always there is more or less impairment of hearing from congestive thickening of the tissues, or the presence of fluid in the cavity. After one catarrhal attack there may never be another. The same cause seems immediately productive of each, because each is more liable to happen at the change of the seasons, the child being more exposed to the cold and the damp air at these times.

Thus, even in childhood a differential diagnosis might be made from the catarrhal affections, and we may reason that the disease at the foundation of the atrophic process may *begin at any age*, although the atrophy is a *malum senilis*.

**Delavan, D. Bryson: The Ultimate Prognosis in Neglected Adenoid Hypertrophy.** (*New York Polyclinic*. 1896. Vol. viii. No. 6.)

After considering the numerous conditions which may ultimately follow untreated adenoid growths, the author concludes:

1. That there are several pathological conditions of the upper pharynx found in adult life.
2. That these conditions are common.
3. That where they are present, the history of pre-existing adenoid hypertrophy can in many instances be distinctly traced.
4. That the conditions which are present in these cases of adult disease are such as would have resulted naturally from the effects of long continued inflammatory action upon the parts concerned.
5. The above premises being true, it is impossible to avoid the inference that prompt and efficient treatment of the original adenoid enlargement would have removed the chief cause of the subsequent disease, and would have prevented much injury and suffering. The great frequency with which disease of the vault of the pharynx due to neglected adenoid hypertrophy is found, the serious character of the conditions resulting from it, and the great difficulty often experienced in overcoming them, all bear

testimony to the fact that, on the whole, adenoid hypertrophy does not tend to spontaneous cure; that when present in any marked degree, it demands thorough treatment; and, finally, that if left to itself, the prognosis is far from satisfactory.

**Stokes, William Royal: The Bacteriological Examination of Nine Autopsies on Cases of Diphtheria.** (*Boston Medical and Surgical Journal*. Vol. cxxxiii. No. 24.)

These were all uncomplicated cases of diphtheria, in which antitoxin had been administered.

The method of examination consisted in making cultures on coagulated blood-serum "slants" (Löffler's mixture) from the lung, liver, spleen, kidney and the blood of the heart. In all of the cases the bacillus diphtheriæ was found post-mortem in cultures from the respiratory tract.

In eight of the nine cases of uncomplicated diphtheria to which antitoxin had been given, the bacteriological examination at the autopsy showed a more or less well-marked invasion of the blood by the pyogenic cocci. The results in detail are as follows: In five cases the streptococcus was found in the liver, spleen, kidney and the blood of the heart; in one case in the kidney and blood of the heart; and in one case in the spleen. The pneumococcus (*micrococcus lanceolatus*), was found only infrequently, it being observed in two cases in the kidney, in one of which the streptococcus was also found in the spleen. In the cultures from one case the only organism present was the bacillus coli communis.

In the lungs of all these cases were found the bacillus diphtheriæ, streptococci, pneumococci, and the staphylococcus pyogenes aureus, either alone or in various combinations.

The presence of the organisms mentioned above in the various viscera enables us to better understand the fatal issue in spite of the antitoxin given; for this agent, as stated above, cannot be assumed to act against any other organism than the bacillus diphtheriæ. Assuming, therefore, beyond peradventure, the efficacy of this remedy, the importance of its early and thorough administration cannot be over-estimated, for by this means the dangers of secondary infection may not only be lessened, but if this condition be present, the system may possibly be better prepared to overcome the ill effects of the various complicating bacteria present in the body.



As to the occurrence of the bacillus diphtheriæ in the internal organs in these nine cases, it cannot be said that it has been met with any less frequently than in other cases which have come to autopsy at the City Hospital, and which are referred to above. In these antitoxin cases it has been found in the kidney in four cases, and once in the heart and spleen respectively.

**Turner, F. M.: Scarlatinal Nephritis and its Varieties.** (*Guy's Hospital Report, Medical Chronicle.* 1896. Vol. iv. No. 4.)

The author records the results of more than two years' study of scarlet fever cases, treated at the North-Eastern Metropolitan Fever Hospital, during which time over 6,000 cases were under observation. The onset of scarlatinal nephritis is peculiarly capricious. There is no definite relation to the severity of the original fever. With regard to the proportion of scarlet fever cases which develop nephritis, Turner gives a percentage of 13.1. Goodall, out of 5,443 cases, had a percentage of 8.74. Caiger, out of 4,015 cases, found simple albuminuria or nephritis in 7.69 per cent. These differences depend in great measure possibly upon the rate of incidence of albuminuria at different times. Thompson, who, with 180 cases in the course of a year, devoted himself to a painstaking investigation, testing a specimen from each patient whenever possible thrée times a day, and even sometimes concentrating the urine, found albuminuria in 62.2 per cent.

Turner shows that scarlatinal nephritis is more fatal to males than females, and more fatal the younger the patient. Fatal cases form a little over 1 per cent. at the North-Eastern Hospital, and less at the London Fever Hospital. Death may occur later on from a relapse, but acute symptoms never persist for more than a few weeks. Scarlatinal nephritis is intimately associated with inflammatory affections of other organs. The clinical evidence, in many cases, points to the concomitant lesion as the cause of the nephritis. The kidneys from fatal cases present usually either an interstitial or glomerular nephritis; but intermediate forms are not rare.

# American Medical Association.

## SECTION ON PEDIATRICS.

Philadelphia, June 1, 2, 3, and 4, 1897.

*President,*

J. A. LARRABEE, M.D., Louisville, Ky.

*Secretary,*

HENRY E. TULEY, M.D., Louisville, Ky.

### FIRST DAY—*Afternoon Session.*

1. Address of Chairman. J. A. Larrabee, Louisville, Ky.
2. The Physiological Treatment of Diphtheria. Elmer Lee, Chicago.
3. The Antiseptic versus the Antitoxin Treatment of Diphtheria. C. W. Braymer, Camden, N. J.
4. The Successful Treatment of Diphtheria as Compared with Antitoxin, with the Exhibition of a Croup Kettle. Jno. H. Coughlin, New York.
5. The Past and Present Status of our Knowledge of the Etiology, Pathology, and Treatment of Diphtheria ; What We Have Accomplished. C. G. Slagle, Minneapolis.
6. The Serum Treatment of Diphtheria, an Answer to Dr. Lee. Prof. Edwin Klebs, Chicago.
7. The Specific Use of Diphtheria Antitoxin in Laryngeal Diphtheria, Edwin Rosenthal, Philadelphia.
8. The Therapeutics of Diphtheria with Special Reference to Antitoxin. W. W. Gray, Bridgeport, Ct. Discussion Opened by Frederick A. Packard, Philadelphia ; Samuel G. Dabney, Louisville, Ky.

### SECOND DAY—*Morning Session.*

9. Intubation. Thos. C. Evans, Louisville, Ky.
10. The Technique of Extubation. Robert H. M. Dawbarn, New York. Discussion Opened by Floyd M. Crandall, New York.
11. Tests to be Applied to every Case of So-Called Maternal Impressions. Marcus P. Hatfield, Chicago. Discussion Opened by S. W. Kelly, Cleveland, O.
12. Some Causes of Congenital Deformities. Ella E. Barnes, Birmingham, Ala. Discussion Opened by Bedford Brown, Alexandria, Va.
13. Tubercular Meningitis. Annie S. Daniel, New York.
14. Meningitis a Complication of Measles. Thos. W. Harvey, Orange, N. J.

15. The Clinical Importance of the Eye Symptoms in Arriving at a Diagnosis of Meningitis in Children. A. E. Davis, New York. Discussion Opened by Harold N. Moyer, Chicago.
16. Hysterical Contractures in Children. Chas. W. Burr, Philadelphia.

SECOND DAY—*Afternoon Session.*

17. Some Fundamental Principles to be Observed in Infant Feeding. L. Emmett Holt, New York.
18. The Use of Artificial Foods Largely a Fashion, Not a Necessity in Country Practice. W. A. Dixon, Ripley, O.
19. Infant Feeding with Special Reference to Examination of the Fæces. Louis Fischer, New York. Discussion Opened by J. P. Crozer Griffith, Philadelphia.
20. Condensed Milk as a Food for Infants: Its Uses and Limitations. Charles G. Kerley, New York.
21. The Relation of the Liver to Digestive Disturbances in Children. J. M. G. Carter, Waukegan, Ill.
22. Typhoid Fever in Infancy and Childhood. Henry A. Fairbairn, Brooklyn, N. Y.
23. Cases Illustrating Typhoid Fever in Children. J. P. Crozer Griffith, Philadelphia. Discussion Opened by William P. Northrup, New York.
24. Some Points in the Treatment of Wasting Diseases of Children. J. B. Cooke, New York.
25. How Best to Care for Syphilitic Children. C. Travis Drennen, Hot Springs, Ark.

THIRD DAY—*Morning Session.*

26. The Study of the Etiological Factors of Difficult Defecation in Children, and Mechanical Means for Its Relief. Thos. Chas. Martin, Cleveland, O.
27. Infantile Constipation. J. W. Byers, Charlotte, N. C. Discussion Opened by Floyd M. Crandall, New York.
28. The Treatment of Rickets and Rickety Deformities. John Ridlon, Chicago.
29. The Ambulatory Treatment of Fractures of the Leg in Children. James P. Fiske, New York.
30. Van Arsdale's Triangular Splint for Fractures of the Femur in Young Children, With Remarks on the Use of Card-board as Splint Material. A. Ernest Gallant, New York. Discussion Opened by John Woodbury, New York.
31. The Treatment of Hernia in Infancy and Childhood. William B. Coley, New York. Discussion Opened by William L. Rodman, Louisville, Ky.



32. The Operative Relief of Intussusception. C. L. Gibson, New York. Discussion Opened by Robert H. M. Dawbarn, New York.
33. New Methods of Resuscitating Still Born and Feeble Born Infants. Bedford Brown, Alexandria, Va.

THIRD DAY—*Afternoon Session.*

34. The Influence of Our Present School System on the Health and Development of the Child. E. Stuver, Rawlins, Wyo. Discussion Opened from the Standpoint of the Physician, by Harriet E. Garrison, Dixon, Ill.; from the Standpoint of the Educator, by Prof. J. Henry Bartlett, Philadelphia.
35. The Training and Home Life of Neurotic Children. Ella M. Patton, Quincy, Ill. Discussion led by C. H. Hughes, St. Louis, Mo.
36. Seed Sown in Childhood and the Harvest Therefrom. Florus F. Lawrence, Columbus, O.
37. Infant Bathing. A. Campbell White, New York.
38. Malignant Scarlet Fever. L. S. Baker, Erie, Pa.
39. The Belladonna Treatment of Pertussis. Harriet E. Garrison, Dixon, Ill. Discussion Opened by Charles G. Kerley.
40. The Signs and Symptoms of Enlarged Bronchial Glands in Children. Frederick A. Packard, Philadelphia.
41. Abnormal Respiration in Infants from Obstruction in the Upper Air Passages. Jas. J. Concannon, New York.
42. Proper Ventilation as a Prophylactic and Curative Measure. A. J. Work, Elkhart, Ind.

FOURTH DAY—*Morning Session.*

43. The Prevention of Tuberculosis in the Predisposed by Appropriate Treatment in Childhood and Youth. Jno. A. Robison, Chicago.
44. The Management of Children With Inherited Tubercular Diathesis. Jos. Wm. Stickler, Orange, N. J. Discussion Opened by Paul Paquin, St. Louis.
45. Skin Granulomata in Children. Jas. S. Johnston, New York.
46. Noma. Thomas Darlington, Jr., Kingsbridge, N. Y.
47. The Bullous Eruptions in Infancy and Childhood. C. W. Allen, New York. Discussion Opened by L. Duncan Bulkley, New York, and I. N. Bloom, Louisville, Ky.
48. A Plea for the More Common Sense Treatment of Sick Children. A. H. P. Leuf, Philadelphia.
49. Teething, Its Pathology and Treatment. G. M. Blech, Louisville, Ky.
50. The Early Recognition and Treatment of Defective Development in Children. Louis F. Bishop, New York.

# American Pediatric Society.

NINTH ANNUAL MEETING.

Washington, May 4th, 5th, and 6th, 1897.

## OFFICERS.

<i>President,</i>	-	-	-	SAMUEL S. ADAMS, M.D.
<i>First Vice-President,</i>	-			W. S. CHRISTOPHER, M.D.
<i>Second Vice-President,</i>	-			CHARLES P. PUTNAM, M.D.
<i>Secretary,</i>	-	-	-	FREDERICK A. PACKARD, M.D.
<i>Treasurer,</i>	-	-	-	CHARLES W. TOWNSEND, M.D.
<i>Recorder and Editor,</i>	-			FLOYD M. CRANDALL, M.D.

## COUNCIL.

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WM. D. BOOKER,	B. K. RACHFORD,
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## DELEGATE TO THE EXECUTIVE COMMITTEE OF THE CONGRESS.

A. JACOBI, M.D.

## ALTERNATE.

T. M. ROTCH, M.D.

## MEMBER ON COMMITTEE OF ARRANGEMENTS.

SAMUEL S. ADAMS, M.D.

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The meetings will be held in Prof. Huntington's room in the Columbian University. Three forenoons, only, are available for the sessions of the Society, the remaining time being occupied by the Congress.

## PROGRAMME.

TUESDAY, MAY 4, 10 A.M.

1. The President's Annual Address. SAMUEL S. ADAMS, M.D.
2. Antitoxin and Intubation in the Treatment of Diphtheritic Croup. J. LEWIS SMITH, M.D.
3. A Case of Tic Convulsif. J. C. WILSON, M.D.
4. Synopsis of Fifty-Eight Cases of Empyema Operated Upon During 1896 in the Children's Service of Mount Sinai Hospital. B. SCHARLAU, M.D.
5. A Case of Congenital Diaphragmatic Hernia, Associated With Recurrent Attacks Simulating Asthma Dyspepticum. WILLIAM D. BOOKER, M.D.
6. Two Cases of Unilateral Tremor in Children. J. P. CROZER GRIFFITH, M.D.
7. A Frequent Significance of Epistaxis in Children. J. HENRY FRUITNIGHT, M.D.
8. Two Cases of Meningitis, Apparently Tuberculous, With Recovery. GEORGE N. ACKER, M.D.
9. Varicella Gangrenosa, A Case. W. F. LOCKWOOD, M.D.
10. Congenital Laryngeal Stenosis. JOSEPH O'DWYER, M.D.
11. Clinical Histories and Autopsies on Certain Types of Disease in Infants and Children. WILLIAM P. NORTHRUP, M.D.

WEDNESDAY, MAY 5, 9.30 A.M.

12. Business Meeting (for members only).
13. Adherent Pericardium in Children. WM. OSLER, M.D.
14. Sarcoma of the Skin in the Newly-Born. A. JACOBI, M.D.
15. Abscess of the Brain in Infancy, With a Report of Three Cases. L. EMMETT HOLT, M.D.
16. A Brief Analysis of One Hundred Cases of Frank Pneumonia. F. GORDON MORRILL, M.D.
17. Hereditary Tendency in Pediatric Practice. FLOYD M. CRANDALL, M.D.
18. Lithæmia in Children. B. K. RACHFORD, M.D.
19. Retro-Œsophageal Abscess. J. P. CROZER GRIFFITH, M.D.
20. A Case of Exophthalmic Göitre Apparently Cured by the Use of Thyroid Extract. CHARLES GILMORE KERLEY, M.D.
21. A Case of Göitre Treated by Thyroid Extract. FRANCIS HUBER, M.D.
22. The Use of Thyroids in Diseases Other Than Cretinism. HENRY KOPLIK, M.D.



THURSDAY, MAY 6, 10 A.M.

23. Report of the Committee on the Collective Investigation of the Antitoxin Treatment of Pharyngeal Diphtheria in Private Practice. WM. P. NORTHRUP, M.D., *Chairman*.
  24. Retained Intubation Tubes; Causes and Treatment. JOSEPH O'DWYER, M.D.
  25. A Case of Diphtheria of the Eye. T. M. ROTCH, M.D.
  26. Exhibition of Apparatus for the Rapid Diagnosis (Bacteriological) of Diphtheria. HENRY KOPLIK, M.D.
  27. A Case of Suppurative Nephritis. ROWLAND G. FREEMAN, M.D.
  28. Pre-natal Infection Causing Diseases Which Develop During the First Month of Life. EDWARD P. DAVIS, M.D.
  29. Fatal Cases of Typhoid Fever in Early Life. HENRY D. CHAPIN, M.D.
  30. A Case of Acetanilide Poisoning in a Newly-Born Infant—Absorption From Umbilical Wound. IRVING M. SNOW, M.D.
  31. Retarded Development of Inferior Maxilla, Due to Injury by Obstetric Forceps. FRANCIS HUBER, M.D.
  32. The Prophylaxis of the Complications of the Exanthemata. C. G. JENNINGS, M.D.
  33. Presentation of Specimen Showing Congenital Deformity of the Biliary Ducts. CHARLES P. PUTNAM, M.D.
  34. An Unusual Case of Erythema Multiforme. FLOYD M. CRANDALL, M.D.
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On Wednesday, May 5th, from 2 to 5 P.M., the general meeting of the Congress will be conducted jointly by the American Pediatric Society, the Association of American Physicians, and the American Physiological Society. The subject of discussion will be: "Internal Secretions in Their Physiological, Pathological, and Clinical Aspects." The American Pediatric Society will be represented by Dr. William Osler.

# ARCHIVES OF PEDIATRICS.

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VOL. XIV.]

JUNE, 1897.

[No. 6.

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## Original Communications.

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### THE EVOLUTION OF PEDIATRIC LITERATURE IN THE UNITED STATES.\*

BY SAMUEL S. ADAMS, A.M., M.D.,

Washington, D.C.

In conferring upon me the highest honor, you have materialized a dream of my professional youth that I might merit esteem; and it is gratifying to have attained it in this body of scientific workers. Now that you have made me your President, I am unable to express to you the gratitude that fills my heart, but in returning to the ranks, the desire to retain your favorable opinion will be as strong as it was prior to my elevation to the presidency.

In presenting to you "The Evolution of Pediatric Literature in the United States," a desire to place upon record, in chronological order, the various and numerous works on the diseases of children, written in this country during the past one hundred years, has been fulfilled. In order to accomplish this end, it was necessary to read critically every essay, pamphlet, and book, devoted to the diseases of infancy and childhood published during the century, which was faithfully done up to 1870; after this, only a few of the more prominent works could be included, as the pediatric field became so fertile that the literary productions were too plentiful for close scrutiny. The labor involved in this research entailed such a tax upon my time that at intervals I was tempted to abandon it, but the fascination of each succeeding work furnished a stimulus, which led me on. In many instances valuable information was gleaned from foot-notes, and essays were also traced by this means. The material comprising this

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\* An address by the President of the American Pediatric Society, at its Ninth Session, Washington, D. C., May 4, 1897.

paper was found in public and private libraries. It is safe to assert that nothing dealing exclusively with pediatrics, published prior to 1870, has been excluded, except a few works on household medicine, certain pathies, and manuals for nurses, which were considered unworthy of mention. I have aimed to be fair in criticizing the different works, and have, in some instances, given due credit for a new or novel idea contained in an inferior book. Many foreign works were published in this country during the century, and were ably revised by Americans, but they were excluded as exotic. A number of masterpieces, devoted to the diseases of women and children, were also omitted from the list, because the children received such a small share of attention; indeed, in several works, it would be charitable to say that the authors mentioned the diseases of infancy owing to custom, and not from a knowledge of them. If any meritorious work on pediatrics, published during the first six decades, has been omitted, it has been overlooked.

Finding it impossible to include all the pediatric literature since 1870, I believed it would be pardonable to make a few selections from the standard works. In doing so, however, it must be understood that no reflection is cast upon the scores of valuable papers and inestimable labor of many scientific pediatricists in this country. Their writings are too familiar to need special comment. It is not intended to claim priority for Americans in the references to methods of treatment. Such methods may have been used in other countries, but the first recorded instances of their application to the diseases of children in this country should be placed to the credit of those named in this paper.

I have paid special tribute to two distinguished members of this Society from a sense of gratitude for the knowledge of the diseases of children which they have imparted to their juniors throughout many years, and believe the panegyric will receive your hearty endorsement.

RUSH, 1789.

The first American recognition of the peculiar manner in which disease affects children will be found in a clinical picture of grip, by Benjamin Rush, in "An Account of the Influenza, as it appeared in Philadelphia in the Autumn of 1789, the Spring of 1790, and the Winter of 1791." The disease is ushered in by





SAMUEL S. ADAMS, M.D.



hoarseness, sore throat, a sense of weariness, chills and a fever; pain in the head and eyes is intense; sneezing is incessant; the appetite and taste are lost; and in many the ears are affected. Pain in the breast, and cough, which alternated with pain in the head, are universal. At times nausea and vomiting are persistent. The limbs are affected with such acute pains as to be mistaken for rheumatism, or for the break-bone fever of 1780. The pains are most acute in the back and thighs. There are profuse sweats and a quick pulse. In four cases the whole force of the disease "fell upon the bowels, and went off in diarrhœa." The fever sometimes "terminated in tedious and dangerous typhus." The epidemic was marked by recurrent attacks. During the prevalence of this epidemic he inoculated twenty children for smallpox, and "never saw that disease exhibit a more favorable appearance."

CALDWELL, 1796.

The first pediatric monograph is an inaugural dissertation for the degree of doctor of medicine, examined and approved by the Medical Faculty of the University of Pennsylvania, and duly defended before the Board of that institution, on the 17th day of May, 1796, by Charles Caldwell, Fellow of the College of Physicians of Philadelphia, etc. The subject of this unique production is "An Attempt to Establish the Original Sameness of Three Phenomena of Fever (principally confined to infants and children) described by Medical Writers under the Several Names of Hydrocephalus Internus, Cynanche Trachealis and Diarrhœa Infantum."

In the introduction he says: "The frequent occurrences, the obstinate resistance and the melancholy effects of those phenomena of fever to which my present speculations are confined, will doubtless be admitted as a sufficient apology for every possible attempt to investigate their cause, to elucidate their nature, or to obviate with success their worst result.

"I have called them phenomena or symptoms, because I do not consider them as primary diseases; I shall treat of them as the dependent effects, not as the original cause of that febrile state of the system, by which they never fail to be accompanied. Without the previous existence of general fever, these phenomena can no more occur, than an effect can, in any instance, take place without the pre-existence and pre-action of its cause. They shall be considered then, in the following pages, as the genuine



and distinctive offspring of *arterial action*, morbid in its *nature*, excessive in its *violence*, and by causes of peculiar tendency, determined to the *encephalon*, the *trachea*, or the *intestines*."

The three diseases are the "immediate result of an evacuating process, which never fails to diminish the impetuosity and tumult of febrile action." This process is uniformly attended with more or less uneasiness and pain; but the stimulant effect of the latter occasioned by distention of the arteries and their efforts to discharge their irritating contents, is fully "counter-balanced by the powerful sedative tendency of the simultaneous evacuation."

The arguments adduced in support of this new theory were: (1) That the diseases were of a *general*, and not of a *local* nature; (2) that the topical affections were preceded by *general fever*; (3) that the diseases were confined to infants and children of similar age, similar constitution, and considerably alike in all their general habits; (4) that they suffer a reciprocal alternation with each other; (5) the *morbid processes* are evacuant; (6) that they are due to an impetus of the blood subjected to a certain degree of febrile action; and (7) that the same remedies are efficacious in all three.

It would lead me entirely beyond the scope of this address to quote extensively from this interesting dissertation. His ideas as to the etiology and pathology of these diseases were certainly original, and his clinical pictures complete, except that he evidently confounded cholera infantum with simple diarrhœa.

Since this is unquestionably the first article devoted exclusively to the diseases of infancy and childhood published by an American, a brief sketch of its author will be pardonable. Charles Caldwell, of pure Hibernian descent, was born in the province of North Carolina, May 14, 1772. He knew only the alphabet at his ninth year, but began the study of the classics in his twelfth. His parents having died in the beginning of his fifteenth year, he accepted the position of principal of the Snow Creek Seminary. He began his medical studies at the University of Pennsylvania in 1792, being in his twenty-first year. His scholarship was thorough and accurate; and his physique most majestic. He anonymously criticised Rush's lectures. In 1793, during the terrible epidemic of yellow fever in Philadelphia, he was the only student to remain, and was placed in charge of a hospital at Bush Hill by Dr. Rush. He opposed Rush and his followers in the contagiousness of yellow fever. Washington

appointed him regimental surgeon in the whiskey rebellion in Western Pennsylvania, and when this was settled he resumed his studies, graduating in 1796. In 1797, when yellow fever again prevailed in Philadelphia, Rush was violently abused in the public press, but Caldwell, under an assumed name, defended him in a masterly manner. During his service in the Army he wrote to Dr. Rush that he was "overtaken by a shower, was wet to the skin while laboring under a high fever; the fever left him in consequence of the shower-bath, and never returned." Rush, in reciting this instance of the reduction of fever by unavoidable hydro-therapy, failed to give due credit to his pupil—an offence which caused a rupture that was never healed. In 1803 he instituted the first clinical lectures in the Philadelphia Alms House. In 1819, having declined to go to Baltimore and New York, he accepted the Chair of the Institutes of Medicine, specially created for him, in the Transylvania University, at Lexington, Ky. Four attempts had been made to establish a college, so it remained for him to make the fifth successful. In 1837 he was called to Louisville to organize the medical school. In 1849 he informed the trustees that he would retire in March, 1850, but the Board anticipated him, declared the place vacant, and offered him an emeritus professorship, which he declined, because "they had nothing to confer which to him would be honorary; that not only was he the founder and constructor of his own honors, but that he was virtually the author of all the academical honors possessed by them."

STUART, 1806.

Dr. James Stuart, January 22, 1806, presented in this country the first recorded necropsy of "a case of cholera infantum, apparently benefited by the use of nitric acid," as follows: "The omentum had nearly disappeared; the stomach was distended, and contained nourishment recently taken; the pylorus was much contracted. Duodenum contracted to half its normal size; liver dark; gall-bladder distended; ileum normal; colon and rectum size of a crow's quill; mesenteric glands obstructed through whole extent; spleen pale and contracted; and kidneys enlarged."

AMERICAN MATRON, 1810.

"The Maternal Physician: A Treatise on the Nurture and Management of Infants, From the Birth Until Two Years Old.

Being the Result of Sixteen Years' Experience in the Nursery. Illustrated by Extracts From the Most Approved Medical Authors. By an American Matron. Philadelphia, 1810."

It seems singular that, with the intelligence that pervaded the medical profession during the first decade of the nineteenth century, the first book on the management and feeding of infants should have been written by a layman who concealed her identity. The work is not without merit, and would form a readable essay if robbed of its quotations from Buchan, Underwood, and others. The work is dedicated to the author's mother in language that thrills the patriotic heart: "That helpless babe which reposed on your affrighted bosom when you fled the vicinity of Boston on the day of the ever memorable battle of Lexington, now a wife, a mother, and near the meridian of life, as a small tribute for all your maternal cares, most respectfully addresses this little volume to your perusal; candidly confessing that all which is valuable in it she derives from you.

"For the nurture of my infancy I am most grateful—but for my education, and, above all, for the sublime lesson you taught me 'that the best pleasures of a woman's life are found in the faithful discharge of her maternal duties,' I owe you more than gratitude.

"May you find an ample recompense in the assurance that from your grandchildren I receive that filial love and respect which has ever been rendered you by your daughter Mary."

The author was attracted by the large number of obituaries to children under two, and was impressed that such a high death rate was occasioned by some gross mismanagement in mother or nurse, or in both. She then looked upon her own children, and her heart "swelled with gratitude to heaven for hitherto averting the shafts of the fell destroyer from them, and permitting the roses of health to bloom on their cheeks." She acknowledges herself indebted to many physicians for useful hints, "but these gentlemen must pardon me if I think, after all, that a mother is her child's best physician, in all ordinary cases." Eight lovely and beloved children, who had all (except the youngest) passed through the usual epidemics, and then enjoyed an unusual proportion of health and strength, were the best apologies she could offer for presuming to give advice unasked, and perhaps undesired, to her fair countrywomen. The mode of treatment was founded upon her own experience, but was



*enriched* by frequent and liberal extracts from the principal medical authorities of the day. Section I. is on the proper treatment of infants under the age of four months. As a mark of good nursing, cleanliness is especially emphasized. She bathed her own baby, aged four months, daily in very cold water. There is good advice on clothing, and the fashion of the day is severely criticised. While she contended that the mother's milk is the best and only *proper* food for infants, she admitted that in some cases a substitute is necessary, when cow's milk, diluted one-half with water and sugar, is the proper food, and assails "paps and other crudities."

She cut the frænum of the tongue in every child, and recommends it in a graphic manner. In dentition, "a cork to bite on, and syrup of white poppies," are recommended, but infants fed exclusively upon milk escape its perils. She hopes lancing the gums will become universal, and advises mothers "to cut them with a very keen razor while the infant sleeps, and avows that they never awaken from it."

The chapters on teaching infants the right use of their hands, the best time and method of setting infants on the feet, and weaning and diet afterwards, contain some good advice, although one of her children nearly died from undigested veal. The chapter on correcting the disposition and temper reminds us of the modern psychologist who endeavors to regenerate child-life by basing his edicts upon the study of his only child. How well the author corrected a selfish disposition in one of her boys can be judged from the closing of this chapter: "I was here almost tempted to address a word or two of advice to *fathers*: but my own good man, who sits laughing on the sofa, whilst his favorite little Joseph is drawing his watch tied to a string round the carpet for a plaything, and who just now *looked* as if he thought me cruel for refusing the dear, enchanting little innocent my inkstand dish for a go-cart, might esteem it too *presuming*." Some of her methods of treatment, like dressing diseases of the navel with roasted raisin and grated nutmeg, may unfold a sacred page to those skilled in the use of modern æsthetic therapeutic measures. Her treatment for snuffles, with topical applications to the ridge of the nose, soles of the feet, injections of breast-milk from the nipple, and her cures for fever, from taking cold, are unique, if not amusing. The following treatment for dysentery met with her favor: "An emetic of ipe-

cac; drink freely of camomile tea, the antiseptic properties of which are peculiarly adapted to the nature of this disease; mucilaginous herbs; opium, rhubarb and calomel; roots and leaves of the running blackberry; flaxseed and hyssop when there is much fever; fresh burdock leaves should be laid upon the table and rolled with a kitchen rolling-pin, and then held before the fire until soft and pliable, when they should be bound around the feet; cleanliness about the bed and room; and the use of disinfectants." She believed in the contagiousness of dysentery, as several of her children had it.

Not only is she entitled to the credit of being the first American pediatric author, but her dissent from the views entertained by foreign writers on the management of infants is worthy of praise. The recognition of the infectious nature of dysentery, and its treatment by ipecacuanha and intestinal antiseptics, was an innovation which was not appreciated by the most intelligent practitioners until a comparatively recent date.

JACKSON, 1812.

Dr. James Jackson (1812). Cholera Infantum—Necropsy. "Liver very large; gall-bladder distended and flaccid, with dark green bile. Spleen and pancreas normal. Spots of congestion on peritoneum. In every case marks of disease on the mucous membrane. Red or purple spots on the mucous membrane of the stomach, which was lined with adhesive mucus. Inflamed and swollen spots throughout small intestines, but marks of disease in large intestine rare. In one case throughout the small intestines were numerous small ulcerations resembling the *ulcus-cula oris* (or canker spots)."

MILLER, 1814.

Dr. Edward Miller seems to have confined his pediatric literature to an article on "The Cholera, or Bilious Diarrhœa of Infants," published in 1814, but in this one effort we find the first reference to the cold bath (95° to 85°) in the treatment of fever, and the efficacy of cold or iced water injected into the intestine, as an "anodyne, sedative, and anti-spasmodic." In the application of the graduated bath for the reduction of high temperature, and irrigation of the intestine with cool water for the relief of tormina and tenesmus, the pediatricist of to-day should not fail to realize the fruition of the prophetic dream of Miller.

LOGAN, 1825.

“Practical Observations on Diseases of Children, Comprehending a Description of Complaints and Disorders Incident to the Early Stages of Life, and Method of Treatment. By George Logan, M.D., Honorary Member of the Medical Society of South Carolina, and Physician to the Orphan House, Charleston, 1825.”

Fifteen years have elapsed since the American Matron published her book, and George Logan presents the second American work on the diseases of children. This author is impelled by “a sense of duty, and not the ambition of being an author,” to publish his experience in the treatment of the diseases of infancy. It is fortunate for the child that this is Logan’s only effort in the literary field of pediatrics. The first reference to the application of splints for the correction of deformed feet is found, however, in this work. He also advises that excoriations of the navel and behind the ears should be healed—a suggestion hitherto discouraged—and his views on infant feeding are likewise worthy of reproduction. “When the child cannot be supported by the breast, the food intended for it should be made to resemble *human* milk as much as possible in all its properties. He should be fed by means of a *sucking-bottle*, or from the spout of a teapot (or some vessel of that kind), a piece of soft cloth being previously tied over it and *perforated*. The child will soon acquire the habit of sucking his *nourishment* from these. The gradual manner in which *it* is thus conveyed into the stomach, the pressure of the mouth upon the bottle, etc., in imitation of the nipple, affords time for a necessary flow of saliva, consequently digestion is more complete, and the child is not so frequently distressed with griping and pain, as when the spoon is employed.” Weaning should never take place in April or May, but the reasons are not given.

DEWEES, 1825.

In 1825 Dr. William P. Dewees, Lecturer on Midwifery in the University of Pennsylvania, published a treatise on the physical and medical treatment of children, which marked the dawn of scientific work in a field that had previously been almost entirely consigned to the care of ignorant nurses, whose principles of treatment were founded upon superstition and conceit. This distinguished luminary in the American pediatric firmament had the temerity to boldly strike at the hitherto impenetrable barriers



of the management of the infant in health and disease, and by enforcing his convictions on their physical treatment, opened a field of study that has never flagged since its inception. If Dewees had only accomplished the one reformation of delivering the child from the incarceration of the swaddle, that was sufficient to entitle him to the plaudits of succeeding pediatricists.

Those of us who decry the dress of to-day because it prevents the proper exercise of the infant's limbs, and yet fail to convince the young mother that her child is being injured, will appreciate the difficulties encountered by one man battling against a time-honored custom. The work begun by him succeeded so well that but few of us have witnessed the tortures so graphically described by Dewees.

"Swaddling consists in entirely depriving the poor infant of the use of its limbs, by their being enveloped in an endless length of bandage, so as to be made to resemble billets of wood; and by which the skin is sometimes excoriated and the flesh compressed almost to gangrene; the circulation nearly arrested; and the child without the slightest power of motion. Its little waist is surrounded by stays, and of such stiffness, and such strictness of application, as to forbid flexion either backward or forward, or, indeed, motion of any kind. Its head is compressed into the form the fancy of the midwife might direct, and its shape maintained by properly adjusted pressure by means of bandages. In fact the talents of the midwife were estimated at this time by her dexterity in the application of swathes, rather than by her professional requirements. When the child is completely dressed in its bandages, it resembles by far too nearly the form of an Egyptian mummy, and, like its prototype, may, it is said, be thrown anywhere, since the swathing prevents injury from rudeness."

He advises the father to relieve the overburdened mother by directing the child's physical education, but fails to admonish him against shirking the duty of sharing the labor of rocking the cradle, which is extolled as an indispensable part of the equipment of the nursery. "The production of fatuity by constantly shaking the brain" would be due to its abuse rather than to its judicious use. Harm might result from violent agitation of the cradle, but no such injury could possibly result from its careful use; "for did gentle agitation do mischief to the organization or functions of the brain, why are not all children born fatuitous, since this organ is subjected to it from its earliest formation?"



After describing the method of using it, he sums up its advantages: “(1) It can be placed in any situation in the room without disturbing the child, for the advantage of either warmth or coolness, for light or darkness, or for air; (2) it supplies the most gentle and certain anodyne, if we may so term it; since it will amuse by its motion where the child is placed in it when awake; lull by its sameness when disposed for sleep, and perpetuate it, when desirable, by a familiarity with its action; for it must be recollected that for nine months previous to birth, the child has been indulged in the gentlest motion, in the fluid in which it constantly swims; consequently the motion of a cradle would seem to be but a continuation of an exercise it had been long used to.”

Dewees had a clearer idea of substitute feeding than his predecessor, but he advised beginning the feeding with two-thirds milk, one-third water and a small quantity of loaf sugar, and proscribed every other mixture. He criticised severely the reprehensible habit of the nurse in letting the child's food pass through her mouth. He advised against giving too much food at a time, and preferred small quantities at shorter intervals. (1) The milk should be pure; (2) one cow's milk; (3) it must be used as soon as possible after being mixed; (4) should not be mixed until wanted; (5) should never be heated by fire, but by a hot diluent or a sand bath; (6) must be kept in a cool place; (7) we must never attempt to restore acid milk. “All the advantages can be procured without its being absolutely boiled, and then cooled as speedily as possible.” After giving some wholesome advice about the care of the utensils used in the preparation of food, he says “mischief sometimes arises from a fastidious desire of improvement. The necessity for alteration should always be ascertained before the change is made; for it would be more than idle to insist upon a change of diet while the child is rapidly, or even perceptibly improving; especially as the quantity of its food can be readily increased in the precise ratio of the necessity for such increase.”

In opening the section on the diseases of children Dewees uses this significant language: “Hitherto no one on this side of the Atlantic has thought proper to give to the public at one view the American practice in the diseases of children. This supineness of our physicians is no less surprising than reprehensible; especially as many are so well qualified for the task by their

talents, and experience, and moreover as such strong inducement was held out by the peculiar character of our diseases and, in many instances, by the novelty and boldness of the mode of treatment."

Jaundice is treated with small doses of calomel and soda.

Aphthæ is regarded as contagious and epidemic, usually symptomatic, but does not involve the entire gastro-enteric tract. Its treatment is identical with that employed at present. Hydrocele is treated by letting two quarts of water fall from a height, through the spout of a teakettle, upon the part.

This is the first book to give the morbid anatomy of cholera infantum, and its treatment by injections of salt and water and the warm bath is worthy of special mention.

Scarlet fever is regarded as epidemic but not contagious, and, when accompanied by high fever, is treated by cold spongings and ablutions.

Many other valuable suggestions might be culled from this book, but enough have been adduced to show that the author was far in advance of his contemporaries. While he does not state the temperature to which the milk should be subjected in preparing it for the infant, nevertheless he distinctly asserts that boiling is unnecessary, provided it is rapidly cooled. Since no small part of the success of the present method of low sterilization is due to the rapid cooling of the milk, it would seem but fair to divide the glory between Dewees, who first advanced the idea, and Pasteur, who perfected it.

Again, the introduction of cold spongings and ablutions into the treatment of scarlet fever should entitle this author to the glory of inaugurating one of the greatest blessings of pediatrics.

PARRISH, 1826.

Dr. Joseph Parrish, surgeon to the Pennsylvania Hospital, published, in January, 1826, "Observations on a Peculiar Catarrhal Complaint in Children" that bore a striking resemblance to ordinary catarrh in adults, sometimes presented a dangerous character, and always required different treatment. The symptoms were such as to mislead the young practitioner into believing that inflammation of the lungs existed. The cases could not always be diagnosed, but the most prominent symptoms were paroxysms of dyspnoea, resembling attacks of asthma, feeble pulse, and cold skin. "Cold cheek" he regarded as a

pathognomonic symptom. The necropsy showed "not the least vestige of inflammation; there was some effusion into the bronchial tubes, but it was such as often occurs, not only where no inflammation has existed, but also in cases of extreme debility. From the result of this examination I inferred that there was, in the pulmonary organs of these children, a debility, which both invited disease and, after its attack, prevented a return to healthy action." Treatment consisted in anti-spasmodics, expectorants, blisters, and the warm bath.

FLINT, 1826.

Dr. Joseph H. Flint presented a "Dissertation on the Prophylactic Management of Infancy and Early Childhood" to the Massachusetts Medical Society, June 7, 1826. It contains nothing new or original, but abounds in quotations in prose and poetry. He deserves, however, credit for emphasizing the idea that "physical culture is to the body what moral culture is to the mind."

PAGE, 1829.

Dr. M. Page, of Richmond, Va., published in January, 1829, "An Essay on the Diseases of Children." This article is well written, but contains nothing of interest to us.

HORNER, 1829.

Dr. William E. Horner, adjunct professor of anatomy, University of Pennsylvania, published in January, 1829, "An Inquiry Into the Anatomical Characters of Infantile Follicular Inflammation of the Gastro-Intestinal Mucous Membrane, and its Probable Identity with Cholera Infantum."

He regretted that cholera infantum was not better understood to place it upon "a sure and perfect pathological foundation," and laments the fact that in spite of its frequency he found but one record of a necropsy in the literature of the past twenty years. Had he been supplied with the *Index Medicus*, he might have been able to refer to the authorities quoted by me. Case I.: Follicular inflammation of the intestinal canal, the symptoms being those of cholera infantum (with a plate showing the ulcerations). Necropsy: "Peritoneal surface of viscera healthy; liver light yellow color; gall-bladder distended with bile; and spleen normal. Mucous membrane as follows: That of the stomach of a sienna color, and of a consistence which permitted it to be



scraped off very readily with the finger. On the small intestines it was generally of the same color, but interspersed at distant intervals with patches of injected blood-vessels, but no extravasation. The clusters of muciparous glands or follicles were very distinct to the naked eye, and had their orifices also enlarged and tumid. The same condition of the muciparous follicles prevailed in the large intestine from one end to the other; but they were larger and more tumid, and gave to the mucous coat somewhat the appearance of having been sparingly sprinkled with fine white sand." He expresses uncertainty as to this condition being normal or abnormal.

EBERLE, 1833.

Dr. John Eberle, of Ohio, published, in 1833, "A Treatise on the Diseases and Physical Education of Children."

The book has nothing new or unique in it, and is based upon Dewees' work. He differs from the opinion of Parrish that the dyspnœa in "congestive catarrhal fever" is spasmodic in character, and asserts that it "depends mainly, if not wholly, on great sanguinous engorgement of the pulmonary blood-vessels—a kind of apoplexy of the lungs."

REYNOLDS, 1833.

Dr. Edward Reynolds, of Massachusetts, published an essay, in 1833, "On the Importance of a Knowledge of the Principles of Physiology to Parents and Teachers." He pointed out the dangers to the young of a studious life. The objective symptoms of such a life are well-known to every careful observer. This demonstrates that the modes of education are not yet perfect. The improvements in education have multiplied the means of supplying a literary thirst, and also the temptations to sacrifice health and strength in acquiring knowledge. He does not believe that ill-health is a necessary consequence of study. The failure of health in school children may be attributed to many other causes, as the unfavorable circumstances under which study is performed. It is "crowded rooms; improper hours transgressing upon the period of sleep; positions unfavorable to the freedom of corporeal functions; improper diet; excessive action of some organs, with unnatural repose of others. It is overlooking the peculiarities of the system, dependent upon various ages and different temperaments; tasking the mind with excessive duties, or at unfitting times. It is a spirit of competi-



tion, wholly unworthy the true lover of learning." Such habits are at variance with the laws of physical education. The remedy consists in correcting these abuses.

When it is remembered that the literature on school hygiene began in Germany as late as 1836, with Lorinser's monograph on "The Protection of Health in Schools," we may indulge in a certain amount of national pride that this subject received attention by Reynolds as early as 1833, and it may account, perhaps, for the fact that his native state has model school-rooms and furniture, and is supplied with the best sanitary regulations for schools of any state in the Union.

GERHARD, 1833.

Dr. W. W. Gerhard, of Philadelphia, published, in 1833, two articles; one, "Cases of Rubeola, Followed by Death," and the other, "Cerebral Affections of Children." The first paper is based on fifty fatal cases of measles of short duration, seen in the Hôpital des Enfants Malades, of Paris. The necropsies were carefully made. "There was intense inflammation of the mucous membrane of the air passages, and death was caused by sudden suffocation. The sonority of the chest, and the peculiar character of the respiration, which was not at all bronchial, but stifled, as if the air dilated the vesicles but imperfectly, and, mingled with the bronchial râles, distinguished it from pneumonia. In connection with the variety of morbid respiration, the sonority of the chest may be a little diminished, but the diminution is then general, or nearly so, and can scarcely be confounded with the flatness by percussion over a hepatized lung."

In the fatal cases of cerebral affections, hemorrhages, abscesses, and basilar tubercular meningitis, were some of the lesions found. The following observation is highly interesting in the light of modern pathology: "The coincidence of the disappearance of the external signs of scrofula, and the existence of cretaceous matter in two of the bronchial glands, seem to prove in this, as in one of the preceding cases, that this substance is a form of one of the tuberculous depositions."

Gerhard, who had recently returned from Europe, was the first to record his observations with auscultation and percussion in the pulmonary diseases of children. He clearly defined the physical signs, and excluded croupous pneumonia, but failed to record the correct diagnosis. In announcing his belief in the

identity of scrofula and tuberculosis he offered a theory which gained but little support until the last decade of the nineteenth century.

Dr. Gerhard published other papers in 1834. He was evidently a conscientious student and pathologist. He found tubercles in twenty-seven of thirty cases examined, and particularly mentions the spleen as one of the organs frequently affected. He also studied the pathology of croupous pneumonia in children. "The test of pneumonia in twenty-three cases was the existence of bronchial respiration, crepitus, bronchophony, and a flat sound on percussion. The symptoms in all came on suddenly, and could not, therefore, be confounded with a tuberculous affection of the lungs, much less with pleuritic effusions."

It is a matter of regret that this careful observer confined his writings to a few journal articles.

JACKSON, 1833.

Dr. Samuel Jackson, of Northumberland, Pa., published in 1833, an article on "Scarlatina Maligna Successfully Treated by Cold Water." His child, aged eleven years, desired water above all things, so he determined to give it a fair trial. "She was then permitted to drink the coldest ice-water, and to hold ice in her mouth; but this last experiment was dangerous lest she might swallow it, and bring on spasms of the stomach. It was then enclosed in a gauze bag, and put far into her mouth to be dissolved and swallowed. I felt satisfied with my prescriptions, and she was desired to use the ice freely, and to drink largely of ice-water.

"The good effects were immediate, surprising, incredible, and almost divine. Within a few hours the pulse was reduced from 160 to 120; the circumscribed crimson disappeared from her cheeks; the extremities became warmer as the fauces and stomach were cooled; the whole countenance was changed; the typhus distress left it, and something of the vivacity of common fever supervened."

The children of to-day should have inscribed upon Jackson's tomb: "He gave us cold water when we were parched with fever!"

LEWIS, 1837.

Dr. J. T. Lewis, in November, 1837, published an article on the "Diseases and Management of Children," in which great

stress is laid upon the examination of the character and quantity of the *secretions*. Among other good things he says: "So convinced am I of the importance of rigidly scrutinizing the character of every alvine dejection, that I have not failed to have those which took place in my absence preserved for inspection, and in many instances I have been thereby enabled to determine the cause and character of the disease, when it would otherwise have remained in obscurity." Although Dr. Lewis was only possessed of the facilities for examining the stools macroscopically, nevertheless, he was the first American, or, as far as I know, of any nationality, to point out the clinical value of such observation.

STEWART, 1843.

Dr. James Stewart, of New York, published in 1843 an excellent treatise on the "Diseases of Children." While the nomenclature borders on the pedantic, still the general plan of the book, especially in the classification of the signs of disease of the various systems, is superior to its predecessors. Greater attention than hitherto is paid to morbid anatomy and pathology, and auscultation and percussion are intelligently applied. Stewart is the first American to record his belief in the specific origin of infectious diseases occurring epidemically.

CONDIE, 1847.

Dr. D. Francis Condie, of Philadelphia, published in 1847, "A Practical Treatise on the Diseases of Children." This is a systematic work, prepared with great care, but is not as complete as the advance in the knowledge of diseases at this time would warrant. The statement that *lobular* pneumonia is converted into *lobar* is worthy of note. It is, perhaps, worthy of mention that although Condie was a recognized authority on diseases of children, and his text-book was used in the schools of Philadelphia, nevertheless I cannot find that he was ever connected with any medical college.

MEIGS, 1848.

Dr. J. Forsyth Meigs, lecturer on the diseases of children in the Philadelphia Medical Association, published in 1848, "A Practical Treatise on the Diseases of Children." This is a decided improvement on previous works, especially Condie's. The classification of diseases according to the systems they affect is new and convenient. The division of diseases of the respira-



atory organs into those of the upper air-passages and lungs and pleura is novel. The order of the subjects into *definition, synonym, forms, frequency, causes, anatomical lesions, symptoms, diagnosis, prognosis and treatment*, demonstrate the acumen of the author. The physical signs of disease are intelligently discussed. The treatment is up-to-date. The bath is again recommended in scarlatina. The work was a standard text-book for several years, was carried through five editions, the last two by Meigs and Pepper, and its author was the recognized authority on pediatrics. Upon the tablet of distinguished American pediatricists is inscribed the name of the illustrious Meigs.

BECK, 1848.

Dr. J. B. Beck, of New York, published in 1848, an "Essay on Infant Therapeutics." Opium is at one time a stimulant, and at another a sedative. It acts with greater energy on the infant than the adult; but it is more uncertain in its action on the former. Great caution should be exercised in its administration, and only preparations of definite strength should be used. Great harm is constantly being done by the unprofessional use of opium, often disguised in some nostrum. His comments on emetics, mercury, blisters and blood-letting are also worthy of perusal.

MEIGS, 1850.

Dr. Charles D. Meigs, professor of midwifery and diseases of women and children in the Jefferson Medical College, published, in 1850, "Observations on Certain of the Diseases of Young Children," being a course of lectures delivered to his class of students the preceding year, and dedicated to it.

It treats of caput succedaneum, inflammation of the eyes, sore mouth, coryza, bowel complaints, infantile jaundice, dress, cyanosis neonatorum, respiratory disorders, forms of laryngitis, whooping-cough, laryngismus, and scarlatina. The diagnosis of each is particularly discussed. Although the theory of Meigs, as to the non-contagious character of scarlet fever, is not the accepted one to-day, nevertheless his remonstrance against drug-ging is loudly proclaimed by pediatric lecturers of the present time.

The good work in pediatrics begun by the two Meigs in the fourth decade of this century is being creditably continued by our co-laborer, Dr. Arthur V. Meigs, a former member and one of the founders of this body, who wrote an excellent book on



"Milk Analysis in Infant Feeding," which was published in 1885. Let us hope that the work of a Meigs will illumine the pages of pediatric literature at the close of the twentieth century.

PHILOPEDOS, 1852.

Philopedos, an ex-dispensary doctor, of New York City, published, in 1852, "A Few Remarks about Sick Children, and the Necessity of a Hospital For Them," which are teeming with good common sense. He attributes the excessive mortality among young children, in great measure, to crowded and ill-ventilated houses, and exposes the unsanitary habitations by the memoranda taken when a dispensary physician. In all ordinary cases of destitution, he says, "the child is cared for by some special method, with the single exception of sickness." As the general hospitals are crowded, he urges the establishment of a well-organized hospital for children, because "they require a peculiar mode of management, and the attendants should be *adapted* exclusively to them."

It has been impossible to trace the identity of "Philopedos," but it is safe to assume that he was instrumental in establishing the Child's Hospital and Nursery—the first hospital devoted to children on this continent—which was organized March 1, 1854, and stands to-day as a monument to this unknown writer.

WATSON, 1853.

Dr. John Watson, of New York, wrote a letter to the *New York Medical Times*, September 20, 1853, on "Clinical Observations on the Surgical Diseases of Childhood and Early Life." He is surprised that a special department for the *surgical diseases of children* among the numerous divisions to which surgery has been subjected, has not been created, and says: "the industrial instinct of modern practitioners is proverbial; it shows itself in almost every conceivable form; it attaches itself to almost every department of the profession, and evinces astonishing ingenuity in striking out new paths to notoriety and wealth; and hence the wonder that it should, up to the present moment, have wholly overlooked so promising a field as the surgical pathology of childhood." Not a single author has given this department of surgery even a passing notice.

"We are all aware that the plastic and growing frame of children is in many respects different from that of the adult, and

liable to many incidental vitiations to which the fully developed frame is no longer subject, or subject only in a much less degree."

He discusses injuries of the shoulder-joint, of the elbow, of the knee, leading to atrophy of the lower limb, separation of the shaft from the upper extremity of the tibia, and twisting, bending, and partial fracture of the shaft of the long bones. The consequences of such injuries, especially atrophy of muscles, are intelligently handled.

JACOBI, 1857-1897.

Four decades of continuous scientific work in pediatrics, during which we find him the author of several books and numerous essays; the institutor of pediatric lectures and clinics; the first professor of pediatrics in this country; the founder of the section on diseases of children in the American Medical Association; the founder of the section of diseases of children in the New York Academy of Medicine; a founder, and the first president, of this Society; and the recipient of the highest medical honors at home and abroad, would seem to justify a glimpse into the achievements of A. Jacobi in guiding the stream of pediatric thought in America.

JACOBI, 1858.

Dr. A. Jacobi, of New York, published, in May, 1858, his first paper on children, entitled "Invagination of the Colon Descendens in an Infant, with Repeated Hemorrhages in the Colon Transversum." Jacobi says: "Invagination of the intestines, from a merely anatomical point of view, is not a rare occurrence. Before and in the moment of death, the paralysis of the muscular tissues of the intestines progressing by degrees and sometimes unproportionately, invaginations of the jejunum and ileum are very frequent; indeed, so much so, as to be a very common result of a great many post-mortem examinations. The same alteration is not of the same frequency in the living, but whenever it occurs, it is generally known to be a dangerous disease." He then explains the reasons for the more frequent invagination in the infant, and recites in detail the case which formed the basis of his paper. He made a thorough examination of the abdominal viscera, and gives a minute description of their morbid appearance. The use of high injections of fluid, and the

insufflation of air into the intestines of this case, is evidence that a thinker had stepped upon the stage.

In 1857 he delivered a course of lectures at the College of Physicians and Surgeons, New York, his first lecture being on "Catarrh of the Infantile Larynx." His characteristic modesty is demonstrated in the following words, spoken at that time: "Five years ago (1854) I invented a small oval mirror, in a wooden frame, with a flexible handle, which, when applied to the soft palate and uvula, renders, after some exercise, the insight into the larynx possible. As I seldom afterward used my instrument, and as I, indeed, never thought of rendering it profitable in other cases, and to the profession generally, I certainly do not pretend to have any priority regarding this invention," which Garcia described in 1855. The same year (1859) there appeared, in a work by Noeggerath and Jacobi, his paper "On the Etiological and Prognostic Importance of the Premature Closure of the Fontanelles and Sutures of the Infantile Cranium." This was the beginning of the publication of his studies on rickets, and you are all familiar with the deep interest he takes in this subject thirty-eight years thereafter.

In 1860 the first special chair on diseases of children was established in the New York Medical College, and Jacobi became professor of infantile pathology and therapeutics, and continued in the college until 1865. In 1860, in referring to the action of the New York Medical College in creating the chair of infantile pathology and therapeutics, he says: "The large number of infantile patients in general practice, the difficulty of diagnosing their diseases, the importance of physical diagnosis and close observation applied to their ailments, the modification of physiological, and therefore pathological, actions and symptoms in early life, the care necessary in selecting the remedies and determining their doses in diseases of infancy and childhood, the occurrence of a number of diseases exclusively, or almost so, peculiar to early life, appeared to render this course exceedingly proper."

He expressed his firm conviction that the older and more experienced we become, the more confidence we shall have in the unvarying effects of medicines. The cause of the skepticism as to the virtue of drugs he attributed to "the absence of both an exact and a distinct diagnosis, and of strict indications in the use of medicines. We shall always learn that wherever a medi-



cine is really indicated, a good effect will always follow a good dose in such a manner that this one principle, *few medicines, simple prescriptions, and large doses* will find its full justification."

In 1865 he accepted the professorship of diseases of children in the Medical Department of the University of New York, but resigned in 1870. In 1870 he accepted the position of clinical professor of pediatrics in the Medical Department of Columbia College, and twenty-seven years later he is still found in this school expounding the most recent advancement in scientific medicine.

His more recent writings are so well known that even their enumeration would be supererogatory. The greatest literary achievements of Jacobi excite admiration which becomes veneration when we remember that he refused to renounce allegiance to our country and return to the "Fatherland," from which he had been exiled, even though the chair of pediatrics in one of the greatest universities in the world was the temptation.

In 1857 Jacobi pressed the button which set the pediatric clinic in motion, and in 1897 he has the glorious satisfaction of seeing the fulfillment of his fondest hopes in the universal recognition of pediatrics as a distinct branch of medicine.

Contemporaneous with Jacobi is Dr. J. Lewis Smith, of New York, whose reputation as an authority on the diseases of children has never waned during the past forty years, and whose treatise on pediatrics has been the accepted text-book in every medical school in this country. It is his work on diseases of children that has immortalized his name, and his heart must throb with pride upon realizing that he has been able, after twenty-seven years of active professional life, to issue the eighth edition. Each edition shows that he has kept pace with the medical world.

In 1858 he was physician to the Northwestern Dispensary.

He rapidly rose in prominence, and in 1869 he was curator of the Nursery and Child's Hospital, and professor in Bellevue Hospital Medical College. That his capabilities as a teacher have been appreciated is attested by the fact that he is still professor in the same school in which he began to elucidate the diseases of the young child.

This Society has joined with many other bodies in conferring honors on him, and to-day he probably holds more positions of honor and trust than any living pediatricist.



SMITH, 1858.

Dr. J. Lewis Smith, physician to the Northwestern Dispensary, New York, published in July, 1858, his first paper on diseases of children, entitled, "Report of the Post-Mortem Appearances in Eleven Cases of Cholera Infantum." The results of this writer's careful observations are:

1. That the stomach, though so irritable in the disease, and the liver, in the few instances in which it was examined, did not present any notable alteration from the healthy state.

2. That in all the cases there was well-marked interstitial inflammation. Two died when only five days sick, and yet in both the descending colon presented the inflammatory lesion in a high degree.

3. That the inflammation was not confined to the mucous follicles, as it has been stated to be by some writers; but it extended in patches over the mucous surface.

4. The portion of the intestinal tract in which the inflammation was not intense was, in all the patients, the descending colon, and colitis was the only lesion invariably present.

We are most interested, perhaps, in Dr. Smith's work on "Diseases of Children," the first edition of which appeared in January, 1869. In presenting his work to the world the author exhibited a trait in his personality that has endeared him to many practitioners—of being charitable to those holding opinions differing from his own. "While the author has respected the opinions of previous writers, and has adopted them, so far as they appeared to be correct, he has depended much more for the material of his treatise on clinical observations and the inspection of the cadaver." Novel views have not been presented unless proved by numerous observations.

By comparing the editions of 1869 and 1896, one is struck with the radical changes that have taken place in regard to disease and its treatment. In the former, artificial feeding is disposed of in three pages; in the latter, eleven are devoted to it. In the first edition we find the first record of thermometry as applied to children. The physical signs of disease are well portrayed, as by a master-hand. In this edition the greatest contrast is seen in the pathology and treatment of diphtheria and membranous croup. The advanced views of Smith on these conditions are so well-known that our only interest is in what he taught twenty-seven years ago.

He defined diphtheria to be a "blood disease with a local manifestation." "The exudate consists largely of cells, to wit, plastic nuclei and pus cells mixed with epithelial; with these elements we find amorphous matter and ordinary delicate interlacing fibrillæ.

"By the microscope we are able to detect, in some instances, a confervoid growth in or upon the pseudo-membrane. This is commonly the *oidium albicans*, or a plant closely allied to it, or the *leptothrix buccalis*, and its presence has led some observers to think that the primary and essential part of the adventitious formation is parasitic. Fortunately, so erroneous an idea of the pathology of diphtheria is easily disproved, for in most cases of this disease no vegetable growth can be detected."

In the treatment of croup, inhalations of steam are considered invaluable, and a mixture of potassium chlorate and ammonium muriate, as a substitute for calomel, is recommended for its solvent effect. Here also we find that mixture of ferric chloride and potassium chlorate, which is still revered by many as a specific for diphtheria and croup. He recognizes the self-limited nature of the infectious diseases, and the expectant plan of treatment.

The differential diagnosis of scarlatinal nephritis can be more accurately ascertained by the microscope than by the quantitative test for albumen. "We discover the fibrinous casts, altered epithelial cells and blood corpuscles."

O'DWYER, 1879.

In 1879 Dr. Joseph O'Dwyer, of New York, stepped into the pediatric field, not as a literary genius, but as the originator of a method of treating laryngeal stenosis caused by pseudo-membranous deposits. He spent much time in devising a method that would give better results than tracheotomy, which had not a single recovery to its credit in the New York Foundling Hospital from its establishment in 1869 to the inception of his experiments in 1880. In 1882 the first operated case of croup recovered, an experience that had not been enjoyed by the staff during the past thirteen years. This one recovery stimulated O'Dwyer to renewed efforts in spite of many discouragements thrown in his way. He intubated a girl, aged 4 years, May 21, 1884. "This was the first recovery in the history of intubation, and was, therefore, a very important event." His next seven

cases were fatal, but his faith in his method never flagged, and his experiments were continued.

In February, 1885, a writer says: "The details of operating and the instruments used are not given, as O'Dwyer is still investigating the subject and has not perfected his plan of proceeding."

In November, 1885, another, in discussing intubation, says: "Its (the tube) introduction in the small child is difficult. Even when properly introduced its presence does not insure permanent relief, for the dangers of croup are not confined to those of mechanical obstruction of the larynx. In short, it is very doubtful whether Dr. O'Dwyer's or other's experiments would ever bring us to other conclusions than those of Bouchut in 1858."

In 1886 O'Dwyer received his first public encouragement from one who has since been a loyal supporter of intubation. He predicted "that at no distant day tracheotomy would be entirely superceded by 'tubage of the larynx.'" The last report (1896) of this writer shows 178 recoveries in 503 intubations, or 35.38 per cent. recoveries.

On June 18, 1887, the first case of intubation by O'Dwyer's method performed in Europe, was reported as a recovery. From this time the success of intubation was assured, and to-day it has so far succeeded tracheotomy that the latter is almost universally performed as a last resort.

For a full account of the difficulties encountered by O'Dwyer in perfecting the technique of intubation, the reader is referred to "The Evolution of Intubation," an address delivered before this Society in May, 1896.

To Joseph O'Dwyer belongs the credit of originating and perfecting intubation. For presenting this boon to suffering children, his name will ever be associated with those that adorn the pages of medical literature.

JACOBI, 1880.

In 1880, Dr. A. Jacobi, of New York, published a "Treatise on Diphtheria." The book is a condensed statement of the present state of knowledge of diphtheria, with the author's personal views on its pathology and treatment. Jacobi again demonstrates in this work his careful methods of precise study, judicial discrimination, and accurate application. The author is



far ahead of his contemporaries in his theories, many of which are still accepted.

KEATING, 1889.

In 1889 the "Cyclopædia of the Diseases of Children" appeared. This series of monographs, so ably edited, is a lasting monument of the architectural skill and engineering ability of Dr. John M. Keating, of Philadelphia.

STARR, 1894.

In 1894 "An American Text-Book of the Diseases of Children," was issued. This work consists of a series of articles written by American physicians under the able editorship of Dr Louis Starr, of Philadelphia.

SACHS, 1895.

In 1895, Dr. B. Sachs, of New York, published "A Treatise on the Nervous Diseases of Children." This, the first American work on the nervous diseases of children, gives evidence of the advance that has been made in this particular line. The work is so complete in detail, and yet so comprehensive in scope, that we should feel proud of this achievement in pediatrics. To Sachs our congratulations are extended, and we believe his book will be the authority on this class of diseases in every American medical college.

ROTCH, 1895.

Later in 1895 Dr. T. M. Rotch, of Boston, published "Pediatrics." In this work are embodied the results of scientific experimentation in infant feeding. To Rotch must be accorded the honor of inaugurating an accurate method of feeding infants, by the establishment of milk laboratories. The simplification of the nomenclature of the various diseases marks a new era in pediatrics, and makes it possible for physicians in different localities to work in harmony. This book will always stand as a monument to its author.

HOLT, 1896.

The latter part of 1896, Dr. L. Emmett Holt, of New York, published his work on the "Diseases of Infancy and Childhood." It has been said of Holt that he "lived with the dead." If this be true it is also true that he emerged from the dead-house with a real live book. He has probably enjoyed better opportunities

for the study of morbid anatomy in connection with clinical work than any other pediatricist.

In 1796, Caldwell, in the first article on pediatrics written in America, tried to prove the pathological identity of three distinct diseases by attributing them to a common cause—fever. In 1896 Holt closes the century with a masterpiece.

#### JOURNALS.

In May, 1868, the *American Journal of Obstetrics* appeared. It professed upon its cover to be devoted to the diseases of women and children, but it was some years later when a separate department for the diseases of children was established. Dr. A. Jacobi wrote the first article, in the first number of the first volume, his subject being "On the Pathology and Treatment of the Different Forms of Croup."

In 1884, Dr. William Perry Watson established and issued the first number of the ARCHIVES OF PEDIATRICS, now so ably edited by Dr. Floyd M. Crandall.

In 1895, Dr. Dillon Brown established *Pediatrics*, which is now passing through its second year.

The literary and scientific work of the members of this Society is of the highest intellectual order, and receives the most favorable comment at home and abroad. If the Society is to perpetuate the high standard adopted by its founders, it must zealously guard its portals to prevent the admission of the unworthy. While it is true that centralization in membership should be deprecated in any national organization, it is also true that indiscriminate generalization would eventually lead to its disintegration.

I DUPONT CIRCLE.

# ACETANILIDE POISONING IN A NEWLY-BORN INFANT: ABSORPTION FROM THE UMBILICUS.\*

BY IRVING M. SNOW, M.D.,

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of Buffalo.

In 1893 Dr. Harrel,<sup>1</sup> of Seattle, published an article setting forth the value of acetanilide as an antiseptic. He found it especially useful in treating the injuries of miners, where coal dust and dirt had penetrated deeply into the lacerated tissues, the resulting wounds being especially difficult to heal. His recommendation of acetanilide as an addition to the antiseptics of surgery was widely accepted, and this drug is to-day extensively used in the hospitals of the United States.

Dr. Frothingham<sup>2</sup> has demonstrated the antibacterial action of acetanilide by laboratory experimentation. He discovered that either pure or diluted, it powerfully inhibited the growth of pus producing organisms, and that it had many advantages over iodoform, being cheaper, odorless, and a more efficient antiseptic.

Dr. Prodnos, of Louisiana, an enthusiast in praise of acetanilide, internally or externally, advises it as a dusting powder for the navel of newly-born children, to prevent the infection of the system through the umbilical wound.

The profession is fully informed of the utility and of the untoward effects of the coal tar antipyretics used internally, acetanilide being generally considered the most dangerous. Occasionally, especially in young subjects, cyanosis, grave cardiac depression, and prolonged prostration follow their administration, and the uncertain, treacherous nature of these drugs has very much restricted their use.

At present there is very little known of the possibility of constitutional symptoms from the absorption of the coal tar antipyretics from raw, inflamed, or granulating surfaces. In view of the frequent use of acetanilide as an antiseptic dusting powder, and the practically unlimited amounts which are habitually sprinkled upon fresh wounds, the following case is submitted to the consideration of the Society with the idea of suggesting that the employment of this drug upon raw or

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\* Read before the American Pediatric Society, Washington, May 6, 1897.



granulating surfaces of young infants is accompanied by considerable danger of toxic symptoms from absorption.

The patient was the second child of a physician, born April 20, 1896, after a normal labor. It was suckled by its mother, and showed every evidence of a perfect development and vigorous physique. The umbilical cord was detached on the seventh day, and as there was some discharge upon the stump, the father dusted the navel with crystals of acetanilide, using about sixty grains of the drug once. Up to the end of the ninth day the child thrived in the most satisfactory way, but during the following night it seemed languid and would not nurse. About 7 A.M. April 30th, the father examined the baby and noticed that it was very cyanotic, presenting a very vivid contrast to its usual color, the child being of a blonde, exceedingly fair complexion.

In addition to this lividity the baby had a very pinched expression, was weak, apathetic, breathing rapidly. The cyanosis steadily increased, and I saw the child at noon. It was plump, well formed. Its face, lips, fingers, toes, in fact the whole of the skin and visible mucosa were of a dark blue color like a subject in the most extreme stage of asphyxia. The lividity was intensified by the child's occasional crying. The rectal temperature was 99°, respiration, 60, pulse, quick and weak.

Having no thought of any drug intoxication, we considered the cyanosis might be due either to congenital heart disease, atelectasis pulmonum or sepsis. The heart was carefully auscultated. Its action was rapid and feeble, but the valvular sounds were clear, with no suspicion of a murmur at the apex or at the aortic or pulmonary cartilages. Air entered all parts of the lungs. There were no râles or areas of silence.

The navel was next examined. The cord had fallen off three days before, and the umbilical hollow was filled with acetanilide. This powder was wiped off, and beneath was a dry, granulating surface, showing no evidence of inflammation or suppuration.

The pupils were normal, there was no sweating, and the child was conscious. The vigilant grandmother had kept the extremities warm by wrapping them in hot flannels. Our patient seemed to be in an exceedingly perilous condition. Poisoning from acetanilide was diagnosed, and oxygen, whiskey, and digitalis were administered. No improvement occurred for about ten hours, the child being limp, apathetic, too exhausted

to nurse. Late in the evening it swallowed a little breast milk, and after twenty-four hours slowly rallied.

The cyanosis lasted seventy-two hours, or increased for about ten hours, was stationary for fourteen hours, and then slowly subsided and was succeeded by a slight, transitory jaundice.

No effect upon the cyanosis was noticed from the oxygen inhalations. The acute impairment of function passed away only after the drug was eliminated. During the illness the functions of urination and defecation were normally performed.

The severity of the toxæmia may be inferred by the rapid emaciation, there being a loss of one pound, fourteen per cent. of the weight, in three days. Not until the fourth day did the child regain its former strength and disposition. In all probability if the absorption of the drug had continued the little patient would have succumbed.

It is interesting to note the long interval, sixty hours, between the application of the acetanilide and the appearance of symptoms. This was perhaps owing to the relative insolubility of acetanilide in most fluid.

I have collected several cases of acetanilide poisoning in children where the drug was used externally as an antiseptic. The symptoms are identical with those seen after an overdose of the remedy given internally; viz., cyanosis and intense depression of cardiac and respiratory apparatus, as described in the classical case of Marechaux.<sup>3</sup>

With some cases, after the use of the drug, absorption was quite rapid. In others, several days elapsed before the characteristic lividity and depression were manifest. None of the cases developed eruptions or urinary symptoms.

In the administration of acetanilide, great variations are observed in its effects upon different individuals. Idiosyncrasies seem to exist in the case where toxic symptoms are produced. Young infants are invariably most readily affected.

According to Hobart A. Hare,<sup>4</sup> in the acetanilide poisoning although both cardiac and respiratory depression take place, yet death occurs from acute respiratory failure. The blood changes in color from scarlet to brownish red, the drug reducing the oxyhæmoglobin to methæmoglobin. Free hæmoglobin may appear in the urine from rapid disintegration of red blood cells. The cyanosis is caused by the existence of methæmoglobin in

the blood by imperfect oxygenation, and by failure of the respiratory apparatus.

The issue of acetanilide poisoning is uncertain. Although a few deaths are recorded, yet recovery has occurred in the majority of cases, showing that the symptoms are more threatening than dangerous.

A good deal of difference exists in the severity of the symptoms.

(1) Dr. Randal C. Rosenberger<sup>5</sup> reports that in an infant sixteen days old, equal parts of acetanilide and boric acid used externally twice a day for three days, caused distinct cyanosis.

(2) Dr. Briggs<sup>6</sup> records that after the circumcision of a boy a week old, acetanilide was applied locally. In twenty-four hours there appeared profound general cyanosis, pinched expression, and coldness of extremities. Removal of the drug and artificial heat caused the disappearance of these serious symptoms.

Dr. Rook<sup>7</sup> had two disastrous experiences.

(3) A baby four days old, with erythematous inflammation of the skin, nates, thigh, and groin. A powder of equal parts of acetanilide and bismuth was applied. During the afternoon and evening this dressing was dusted on the inflamed area several times. On the following morning the baby was deeply cyanosed, dying of collapse a few hours later.

(4) Not realizing that the fatality was due to acetanilide poisoning, Dr. Rook used acetanilide upon an infant two days old, suffering from erythema of the thighs and nates. The application was made at 10 P.M.; next morning the child developed intense cyanosis; twenty-four hours later full recovery took place.

(5) Dr. Carmalt,<sup>8</sup> in an eighteen-year-old girl, applied powdered acetanilide to an ulcer with profuse suppuration. The drug was used every four hours for a day; when cyanosis developed the drug was discontinued, and in twenty-four hours the symptoms disappeared.

(6) Dr. R. C. Newton<sup>9</sup> employed acetanilide as a local application in a girl of four, suffering from an ulceration on the right hand. This plan of dressing was used five times in nine days, amount of drug twenty to forty grains. The arm was dressed on Saturday and Sunday. Four hours later the child complained of pain in the bowels, was faint and sick, and passed into a state bordering on collapse; the eyes were glazed and staring, the face cyanotic; the pulse was 160, the respirations 32. The



child laid motionless on its back for several hours; then, after vomiting and a fæcal evacuation, fell asleep, and awoke as well as ever. As the cause of the symptoms was not appreciated, the acetanilide was used again on Tuesday and Thursday. After the last application, the child complained of precordial distress and of fatigue, then brightened up, and some hours afterward sank into profound collapse, and was thought to be dying. Under the use of stimulants the patient slowly improved.

Dr. Morton,<sup>10</sup> who has a very large experience with acetanilide as an antiseptic, says that if a very large surface be exposed to the action of the pure drug, toxic symptoms may occur, and advises that the drug be employed diluted.

(7) He quotes the history of an infant of fourteen months, whose hip he excised for tuberculosis, using first iodoform gauze, and afterwards acetanilide gauze (10 per cent.), as a packing. Four hours later the temperature dropped five degrees, with great pallor and a feeble pulse. On the removal of the gauze the temperature arose, and the child rallied.

Although the advantages of acetanilide in surgery appear to be considerable, it being inexpensive, odorless, and having a strong, germicidal action, it is certain that either from idiosyncrasy, impurity of the preparation, or unexplainable ease of absorption, profound toxic symptoms may develop from the drug entering the blood from fresh or granulating wounds.

From the cases quoted, it is evident that acetanilide, undiluted, should be discarded in the surgery of young children, and is especially dangerous when used as a dressing for the umbilicus of the newly-born. If caution be not exercised, the surgeon, on some more or less important occasion, may have the results of his skill offset by poisoning from his antiseptic.

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## THE RAPID BACTERIOLOGICAL DIAGNOSIS OF DIPHTHERIA.\*

BY HENRY KOPLIK, M.D.,

New York.

In presenting this apparatus, I wish to speak more especially to the general practitioner and pediatricist rather than to the experts of bacteriology. The apparatus and methods here to be described were first published in the *New York Medical Journal*, August 1, 1896. The early bacteriological diagnosis of diphtheria has become an imperative fact. Those cases where we have but little membrane or no membrane, or even where the membrane is quite extensive, must be fixed as early as possible as to their true bacteriological nature, in order that modern methods of therapy may be inaugurated early in the disease. Twenty-four hours delay is a serious matter in the administration of anti-toxin, not to count the suspense of the doctor, patient, and patient's friends. From my studies I find that the shortest possible time within which a bacteriological diagnosis of diphtheria may be positively made is two and one-half to three hours. This is done by means of the incubator and Loeffler serum tube.

The method of making a diagnosis by means of staining the pieces of membrane on a cover glass has proven to be unsatisfactory. Moreover, I have found in certain cases the bacilli are few and the streptococci are present in excessive numbers; if we wait twelve to twenty-four hours, they have outgrown the few bacilli, etc. Examination of the culture tube after twelve hours shows nothing but streptococci. This in spite of the fact that blood serum of Loeffler is especially favorable to the bacilli. In these cases, therefore, the early examination of the culture tube, two and one-half to three hours, will fix the diagnosis of bacillary diphtheria, whereas later on we are apt to find so many streptococci that the diagnosis is hopeless. What does this mean? It means that the bacilli outgrow the streptococci during the first few hours, and if the bacilli on the swab have been few, the streptococci, when they begin to proliferate, as they do later, spread over the bacilli.

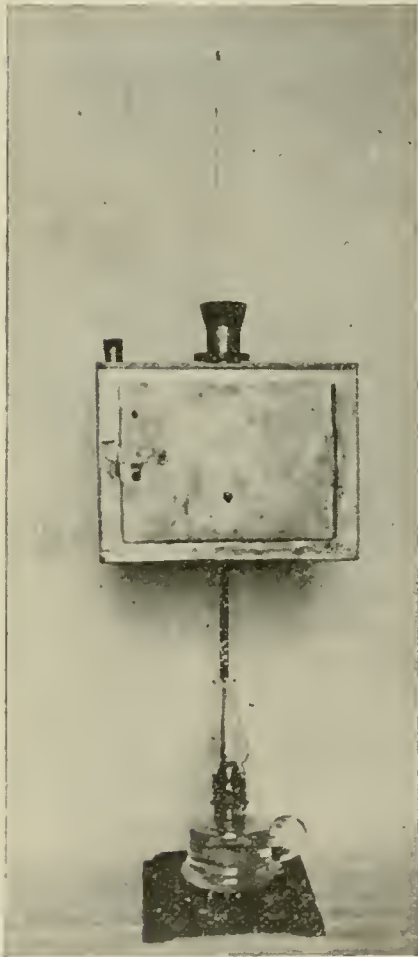
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\* Read before the American Pediatric Society, Washington, May 6, 1897.

Thus, just in the cases where hitherto diagnosis has been obscured, with the following method we are able to make a very early diagnosis, as well as in the cases where the bacillary material on the swab is large.

*Medium used.* The medium employed is the Loeffler sugar blood serum, and the swab used in most cities now to make the clinical diagnosis. On this medium alone the bacilli thrive dur-

ing the first few hours at a rate exceeding that of the other bacteria.



INCUBATOR EMPLOYED IN MAKING A  
RAPID DIAGNOSIS OF DIPHTHERIA.

*The incubator* is the small water oven in use in all chemical laboratories for drying purposes—inside measurement four by five by six inches—just large enough to accommodate a small or large test tube with medium for culture. It must not be larger. This oven, supplied with a thermometer as in the cut, is mounted on a tripod or retort stand. To prepare the oven for use, it is filled with water; the temperature of the internal chamber is rapidly raised with a Bunsen burner to  $37^{\circ}$  or  $38^{\circ}$  Celsius, which takes five minutes. As the temperature reaches  $37^{\circ}$  the flame is removed, and replaced by the small kerosene lamp. A small flame in the lamp will keep the temperature of the inside chamber quite constant at  $38^{\circ}$  for hours.

For three hours we need not watch closely, but for longer periods it may need occasional looking after. Having inoculated the serum tube in the manner now well-known, it is placed on the bottom of the inside chamber, the door closed, and not disturbed for two and one-half to three hours.

At the end of this time it is taken out, and the surface carefully scraped with the platinum hook used for this purpose; the cover glass is prepared in the regular way, and stained with blue



of Loeffler. At the end of two and one-half to three hours the growth of colonies can be distinguished on the surface of the serum with a magnifying glass; at the end of four hours with the naked eye. It is useless, and indeed, as I have shown, harmful, to wait longer. At the end of five hours the growth is very palpable. The scraping of the surface of the serum with the sterilized platinum loop should include the whole surface of the serum, and should be done in a longitudinal direction. No attempt, of course, is made to pick out colonies.

The bacillus diphtheriæ is a very hardy micro-organism when cultivated on the proper medium. It grows with greatest luxuriance below  $39.5^{\circ}\text{C}$ . At this temperature and above, it shows a diminished activity of growth, and at  $40^{\circ}\text{C}$ . (Roux), will cease to grow in a few days. I have found that the best results are attained by keeping the temperature of the internal chamber of the incubator at  $38^{\circ}\text{C}$ . The whole method depends on the principle of forcing the growth of the bacillus during the first two and one-half to three hours at  $38^{\circ}\text{C}$ .; not to overstep this temperature, and not to work, as in the laboratories, at lower temperatures, such as  $36^{\circ}\text{C}$ . The method which I have detailed has had a long and serious trial; it has not failed me. It can be mastered by every physician who is familiar with the details of clinical diagnosis. We can with it inform ourselves within a few hours of the nature of the malady we are dealing with.

66 EAST FIFTY-EIGHTH STREET.

## RETRO-PHARYNGEAL ABSCESS.

BY FRANCIS HUBER, M.D.,

New York.

Instances of retro-pharyngeal suppuration, exclusive of those secondary to tubercular disease of the vertebræ, are of frequent occurrence in the densely settled districts of New York City inhabited mainly by the poorer class of immigrants.

These abscesses are more often met with laterally, and in but few instances do we find them in the median line. They occur in anæmic, rachitic and scrofulous or tuberculous subjects. Sometimes they are caused by infection from the pharyngeal mucous membrane, the seat of an acute or chronic catarrh, or they arise in consequence of traumatism by direct injury, or impaction of foreign bodies, as fish bones, etc., and at times as sequellæ to the infectious diseases, as measles, etc. I have seen two cases after diphtheria.

While it is true that some may result from inflammation of the connective tissue posterior to the pharyngeal mucous membrane, my study of a large number of cases has convinced me that the vast proportion are the sequences of an adenitis and peri-adenitis of the glands along the anterior aspect of the cervical vertebræ. The frequency of the occurrence of this disease in the young before the age of fifteen months, and particularly under one year—the period of life during which these glands (Henle's glands) are most developed, for, according to some authorities, they atrophy after the third year, further favors this view. We frequently see cases attended with marked swelling, thickening and other evidences of glandular inflammation, which stop short of suppuration, and in which resolution occurs in a week or so.

The retro-pharyngeal abscess may precede, be coincident with, or following in the wake of, a similar process in the superficial cervical glands at the angle of the lower jaw. In other instances the external glands, on the affected sides, are more or less enlarged, are freely movable, not tender, and resume their normal state, when the suppuration in the deeper parts has run its course. In rare cases the suppuration exists on both sides, and fluctuation is transmitted across the neck, anterior to the

upper cervical vertebræ. More frequent in the second half of the first year of life, I have seen a number in children three to four months old. The youngest occurred in an anæmic child, five weeks old, the subject of rickets, with marked cranio-tabes. In spite of its poor general condition, the recovery after operation was rapid.

The symptoms are characteristic and ought not to be misinterpreted. The difficulty in swallowing, nasal twang to the voice, or cry, the position of the head and facies are pathognomonic. The head is retracted, rigid, and may be drawn more or less to the affected side. The breathing is labored and snorting; any attempt to bring the head forward increases the dyspnœa and distress of the little patient. The mouth is open and deglutition difficult. The child at the breast takes hold of the nipple, nurses once or twice and then stops to catch its breath, thus nutrition suffers greatly. Sometimes there is a fulness or even a fluctuating tumor near the angle of the jaw on the side involved. More or less constitutional disturbances are present, as fever, restlessness, cyanosis, increased thirst, etc.

The situation of the abscess, whether high up in the pharynx, in the oro-pharynx or lower down, modifies the symptoms somewhat.

If the abscess be situated high up in the pharynx the nasal twang to the voice is more marked; if the abscess be low down nearer the larynx, the difficulty in swallowing is greater, and croupy cough and respiration may add to the difficulty of arriving at a correct diagnosis.

I can recall distinctly the case of a young child brought to Dr. J. Huber in a cyanosed state, breathing with its mouth open, head thrown back, gasping as though each breath were the last—in whom a digital exploration of the pharynx caused a rupture of the abscess situated high up in the naso-pharynx, with escape of pus through the nares, and a rapid amelioration of symptoms within a few minutes. I have seen several instances in which the marked croupy symptoms masked the diagnosis for a short time.

Inspection of the pharynx reveals the usual evidences of inflammation with marked tumefaction on one side. In these cases a positive diagnosis is established by a digital examination which must be made quickly, and when expertly done does not cause any serious distress. By palpation only can we arrive at



a positive diagnosis. If left to nature the abscess may rupture, and the pus, escaping slowly, is swallowed, or it may enter the larynx and give rise to unpleasant symptoms or even death.

In other cases burrowing occurs in various directions into the mediastinal space or point externally under the angle of the jaw, etc., and in one case in my experience perforation took place through the external auditory canal.

If the case be seen early, instillations of a warm physiological salt solution into the anterior nares, and the internal use of small doses of the tincture of the chloride of iron and potassium chlorate at hourly intervals, relieve the attending catarrh.

If the swelling be marked, even though fluctuation be not present, multiple punctures with a grooved exploring needle affords considerable relief for the time being. I prefer this to scarification. Hot or cold applications externally do not seem to influence the subsequent process to any extent. When fluctuation is present the abscess must be opened. A multitude of instruments more or less ingenious or complicated, have been invented. Any small knife guarded to within half an inch of the point will answer.

Personally, I prefer a sharp pair of dressing forceps for the purpose. If the abscess be very large and tense, to avoid the danger of the entrance of pus into the larynx, a grooved director may be thrust into the most prominent portion of the swelling, and sufficient fluid be allowed to drain away to relieve the internal pressure and tension, and then open up further with the dressing forceps.

The method of procedure is as follows: Should the condition of the patient admit, the child, seated on the lap of the attendant, is firmly held, the left index finger of the operator is introduced into the mouth and rests upon the most prominent portion of the fluctuating mass, serving as a guide to the dressing forceps, which are forced into the tumor, opened up, the head being quickly inclined forward by the assistant so as to favor the escape of the pus which wells up through the mouth. If the condition of the little patient be critical, it is far better to keep the child in the recumbent position, lying on the affected side, head low; then, using the finger as a guide, open with forceps.

If a knife be employed, as the incision is clean cut, the danger of hemorrhage is greater, and the opening is more apt to close earlier.

A friend, an experienced and able practitioner, encountered rather a severe hemorrhage and oozing of blood after the use of the knife, and it was months before the child recovered from the consequent anæmia.

When the forceps are employed the opening is ragged, irregular, and is not so apt to bleed or close too early. In many of these cases we must operate in the dark, using the finger as a guide without the aid of vision, and less harm is done with the comparatively blunt forceps.

When the abscess has been opened we should keep the nasopharynx clean by instillation of salt water and internal use of small doses of iron and chlorate of potash.

Constitutional treatment should not be neglected. Tonics, good food, fresh air, and general hygienic measures instituted.

Such abscesses have been operated upon from the exterior by careful dissection of the structures, anterior and posterior to the sterno-mastoid muscle. This method should be adopted in cases depending upon tubercular disease of the cervical vertebræ. Ordinarily, in the acute conditions met with in practice, opening through the mouth is a simple plan and readily accomplished. The danger of sepsis is not great. If the abscess points externally, the incision through the skin over the most prominent point should be adopted.

The prognosis is good. Of a large number of cases, some of them in a very bad condition, I can recall but one terminating unfavorably.

209 EAST SEVENTEENTH STREET.

# IMMUNIZATION WITH ANTITOXIN.\*

BY BURT RUSSELL SHURLY, M.D.,

Laryngologist to the Detroit Poor Commission and Board of Health.

Notwithstanding the wealth of literature during the last fifty years, recommending numerous remedial and preventive measures, and the continuous efforts of Health Boards in disinfection and isolation, diphtheria has extended every year with a largely increasing mortality in all parts of the world, as the statistics of our great cities will show. The death rate averages 25 per cent. in our own city, and reaches 60 per cent. in some of the cities abroad. The prophylactic treatment, therefore, is obviously a matter of the greatest importance.

Immunity in general we find to be natural or acquired. The former is an hereditary exemption, illustrated by the fact that man and the lower animals have infectious diseases peculiar to themselves. Acquired or artificial immunity may be produced: (1) By inoculating a small quantity of a virulent culture of some special microbe; (2) By the introduction of ptomaines or toxins into the system; (3) By inoculation of attenuated microbes, and, finally, by use of serum from animals previously rendered immune. It is the latter method of producing immunity that offers most in the line of preventive therapeutics.

To Behring we are indebted for the discovery that the toxalbumens, in virulent cultures of diphtheria germs, can be neutralized by the blood of immune animals. Further experiments show this to operate in such a way that a definite quantity of antitoxin will neutralize a definite quantity of toxin.

But little is known as to the nature of antitoxin. Two theories have been advanced as to its mode of action. The chemical theory supposes a direct neutralization of the toxin. By the experiments of Buchner and Roux this theory was proved to be untenable. The vital theory then came into favor, maintaining that the antitoxin acts through a cell-stimulation, a condition of cell toleration to the toxin being established. This offers a satisfactory explanation for the fact that the early administration of serum for curative effects has met with greater success than where injected late in the course of the disease. The cells, weakened by a prolonged toxæmia, fail to give the necessary responsive action.

In contra-distinction to the long immunity enjoyed after many

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\* Read before the Detroit Academy of Medicine.



of the infectious diseases of children, diphtheria offers but a short period of insusceptibility. Auto-infection is comparatively frequent, and it is stated that one attack will render the patient, in some cases, more liable to a second infection. Certain individuals, however, offer great resistance to the development of the diphtheria bacilli, and Wasserman, in trying to explain this, examined the serum of healthy subjects. The blood of those who had had diphtheria, or angina, exhibited decided antitoxic properties, increasing with age and showing remarkable antitoxic power in subjects over forty years of age.

In the production of a satisfactory immunity in diphtheria, the essential elements to be considered are the provision for immediate action and a sufficient degree of protection. As diphtheria and tetanus have afforded the most satisfactory results in experimental researches with the toxins of pathogenic microorganisms, none other of the infectious diseases being reproduced in animals with all essential features, it is not so remarkable that these results should be demonstrated in the therapy of diphtheria. Immunity must be investigated separately for each disease, and this accounts for the arduous labor this task imposes.

Comparatively few extensive investigations on immunity with antitoxin have been published in this country. Biggs reports its use at the New York Infant Asylum, where in five months previous to the use of the serum, there were twenty-two cases with fifteen deaths, and later 107 cases developed in 108 days. Antitoxin immunizations were then resorted to, and the disease eradicated with no serious results attending the use of the protective agent. Morrill, at the Children's Hospital, Boston, reports 438 immunizations. Previously to the use of antitoxin the hospital was closed three times on account of diphtheria. After antitoxin was used cultures were taken regularly, and no case of bacteriological diphtheria developed under thirteen days. Roux made 128 injections, following which the patients were exposed for many weeks, without a single case developing. The New York Board of Health reports 15,986 immunity injections with 79 cases, one proving fatal. Holt reports at the Nursery and Child's Hospital, New York, forty-six cases of diphtheria developing in the three months preceding immunization, and the eighteen days preceding showed fifteen new cases; 110 children were injected, no new cases developing up to the time of the report—a period of sixty-five days.

Behring gives a report of 10,000 preventive inoculations, with ten cases developing, all proving to be mild attacks. The records of various other investigators show a period of fourteen days with positive immunity. Donald reports favorable results at the Protestant Orphan Asylum, of Detroit, with one case developing on the eleventh day.

My own experience with immunization is confined to investigation at the Children's Free Hospital, the Woman's Hospital and Foundling's Home, and private practice, especially among the poor of the city of Detroit.

On April 26, 1896, M. S., nurse at the Children's Free Hospital, was referred to me complaining of a sore throat and the attending phenomena of diphtheria. On examination the left tonsil showed a suspicious gray exudate. The case was immediately isolated to an adjoining building, and Loeffler's solution and peroxide of hydrogen used under the direction of Dr. H. A. Cleland, the attending physician. Later, a culture being taken and Klebs-Loeffler bacilli found, the case was immediately transferred to Harper Hospital. In the five days following four new cases developed from different wards of the hospital, which made it apparent that the intruders had come to stay. The hospital was closed, and frequent inspection of the throats made, irrigations being prescribed for those showing any abnormal conditions. But on May 1st, two new cases having developed, it was considered advisable to immunize all the children. Through the kind assistance of Dr. E. M. Houghton, and the generosity of Parke, Davis & Co. this was made possible, and twenty-three children, from one to fourteen years of age, were injected with one c.c. of anti-diphtheritic serum, representing 200 antitoxic units. Infants of three to four weeks were given one-half c.c. Those afflicted with serious diseases were not immunized.

The results of immunization were entirely satisfactory. The serum proved perfectly harmless in every case. The rash that usually develops within nine days did not appear. None of those immunized developed diphtheria, and no new cases occurred in the hospital until July 26th.

The temperature effects were rather remarkable. Twenty-four cases exhibited a fall of from  $2.2^{\circ}$  to  $0.6^{\circ}$  in eight hours after inoculation.

Four days later, having kept the cases at Harper Hospital

under daily observation, the resident physician himself became the subject of a rare and interesting form of diphtheria. May 5th he developed a troublesome epistaxis from the left nostril. On examination Dr. Hickey discovered a membranous rhinitis confined to the left side only and limited in its extension by the projection of a spur. The removal of a piece of this membrane was attended with profuse hemorrhage. The diagnosis was confirmed by Dr. E. D. Shurly and Dr. C. G. Jennings and a culture taken from the membrane, but no Klebs-Loeffler bacilli were found. Thinking it safe to travel, therefore, he went to Chicago, and while there came under the observation of several leading specialists. Two different cultures were taken, as there seemed to be some difference in diagnosis. The Chicago bacteriologist reported Klebs-Loeffler bacilli present. Under the peroxide and aristol treatment of Dr. Geo. Morgenthau, the condition rapidly improved. The highest temperature recorded in the case was  $100.2^{\circ}$ , attended with some enlargement of the cervical glands on the left side.

The other cases of diphtheria sent to Harper Hospital made uneventful recoveries.

On December 6th, forty-four patients at the Woman's Hospital and Foundling's Home were immunized, five cases of diphtheria having developed during the first week of December, with two deaths.

The dosage in immunization at the present time being still uncertain and dependent on experimental study, reference was made to the observations of L. Emmett Holt, and the cases were injected by Dr. C. G. Jennings and myself according to age, as follows:

1 to 3 months,	.	.	.	50 units.
3 to 4 months,	.	.	.	75 "
4 to 6 months,	.	.	.	100 "
6 months to 1 year,	.	.	.	150 "
1 to 2 years,	.	.	.	175 "
2 to 4 years,	.	.	.	200 "
Adults, mostly pregnant women,	.	.	.	400 "

This dosage seemed entirely satisfactory, and none of the immunized cases developed the disease. Two grave cases of marasmus were inoculated with fifty units each. One case died twelve hours after injection; the other steadily improved in health, and the resident physician, Dr. Walker, reports at the



present time a perfectly nourished child. The fatal case, on post mortem examination, gave no internal evidence as to the cause of death.

On December 15th, a case not immunized developed diphtheria. Another was sent to Harper Hospital, January 22d, showing that the immunized cases had probably been subjected to further exposure. No rash, abscesses or other deleterious effects were observed.

In private practice the use of the 250 units dose has, so far as I have been able to observe, been entirely satisfactory, no patients immunized having developed the disease.

If, then, present observations prove correct, we have a valuable artificial aid to the natural powers of resistance, that can be called into requisition at any time to combat the growth and increase of the diphtheria bacilli.

From a study of this subject the following conclusions seem justifiable:

I. Previous prophylactic medicinal measures have been almost entirely unsuccessful.

II. As an attack of diphtheria immunizes the subject for a comparatively brief period only, nothing more can be expected of the anti-diphtheritic serum.

III. Immunity is immediate.

IV. Fresh serum can be generally relied upon to immunize for thirteen days. My experience, as recited in the foregoing, is based on the exclusive use of Parke, Davis & Co.'s anti-diphtheritic serum.

V. No case of serious kidney disturbance, abscesses or eruption was observed.

VI. Serum should be omitted in grave cases of chronic disease.

VII. Other acute or chronic diseases are not affected by the serum.

VIII. The ordinary hypodermic syringe can be used for immunization.

IX. The immunizing dose is followed by only a slight reaction.

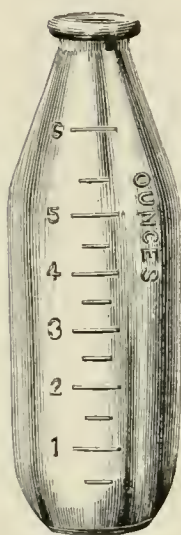


# A BOTTLE OF IMPROVED FORM FOR PASTEURIZING MILK AND FOR NURSING.\*

BY ROWLAND GODFREY FREEMAN, M.D.,

Pathologist to the Foundling Hospital ; Pathologist to St. Mary's Free Hospital for Children, New York.

The bottle which I present is designed to secure facility for cleansing. This end has been obtained in a measure by the adoption of a short neck, which secures more ready access to the interior, as in the bottle designed by Dr. Seibert, and a large opening, as in the bottle designed by Dr. Rotch, but still the defect has appeared to be the bulging portion between the neck and the body whose concave interior surface is difficult of access.



In this modified bottle the short neck and large opening have been retained, but that portion of the bottle between the neck and the body, here forms a truncated cone with straight sides, so adapted to the opening of the neck that all parts are accessible to any straight instrument of suitable size.

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**Enuresis of Over-Feeding.**—According to Dr. J. P. Cobb, a very common cause of enuresis is the pernicious habit of feeding children too much proteid food. An excess of proteid food is not made use of by the system, but taxes the digestive organs to put it into less highly organized forms, to reduce it to excretory compounds. Much of this excess is eliminated by the kidneys as partially reduced peptones, imperfectly oxidized urates and allied compounds. A urine overloaded with these solids causes an unduly irritable bladder, the intrinsic nerve mechanism is subjected to unusually irritating impressions, and the reflex action of the lumbar centre is more frequently and persistently invoked.—*Medical Times*.

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\* Presented at the meeting of the American Pediatric Society, Washington, D. C., May 6, 1897. The bottle may be obtained from James Dougherty, 911 West Fifty-ninth Street, New York.

# ARCHIVES OF PEDIATRICS.

DEVOTED TO THE

DISEASES OF INFANTS AND CHILDREN.

JUNE, 1897.

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## “HOSPITALISM.”

This term may seem to the general practitioner to be one of vague and uncertain meaning. Experience in an infants' hospital would soon convince him that it well describes a very definite and grave condition. Even in general hospitals the attending staff soon learns that, except for certain incurable diseases, a prolonged stay is usually not advantageous. The younger the patient, the more marked does this become. Under one year, the death rate in all infants' hospitals is excessive.

The causes for this condition of things are numerous. Some are clearly apparent, and may be easily remedied; others are obscure, and in actual experience are very difficult to correct. During recent years there has been a remarkable multiplication of hospitals for infants and children. The desire on the part of the charitable to provide for the shelter and care of sick babies is a most worthy one. No class of invalids appeals more strongly to the sympathies than do these helpless little sufferers. But it has been the sad fortune of many such benevolent givers to be seriously disappointed in the results, when viewed by the death rate alone. It is difficult for them to understand why infants

placed in comfortable and beautiful surroundings should, after a time, begin to pine, and gradually waste away. Hospital physicians have not infrequently been blamed by lady managers for what seemed to them improper haste in sending children out of a comfortable hospital ward to an uncomfortable and perhaps unhygienic home. Yet such a course is necessary in most hospitals to save the baby from hospitalism, a disease more deadly than pneumonia or diphtheria. That this is not an exaggerated statement may be demonstrated by the records of every infants' hospital situated within the limits of a large city. The condition is by no means a new one; it was described years ago by Jacobi.

The course pursued by these cases was well described by Dr. Henry D. Chapin in the last number of the ARCHIVES. "The earlier the age," says Dr. Chapin, "the greater is the susceptibility to hospitalism, and the quicker it ensues. One of the first conditions to be noted is a progressive loss of weight that is not dependent upon the original disease, as it often takes place after recovery when the child is not sent out soon enough. This ensuing atrophy bears an inverse ratio to the age, and is especially marked under six months. Older infants are less susceptible, but if kept long enough, they will surely show stationary, and then losing weight. This often takes place while the infant is apparently digesting its food, which may be the best that can be artificially produced. Beginning atrophy, not depending upon a lesion, should be an indication for immediate discharge from the hospital. If it gets beyond a certain point, no change of environment or food will save the infant."

As this condition develops, progressive anæmia appears, and the child frequently dies from marasmus, or simple wasting without organic disease. Not infrequently pneumonia, diarrhœa, or other acute disease supervenes, which the child is totally unable to overcome. Many such children might be saved by timely removal from the hospital, despite the apparent contradiction that their lives had been saved not many weeks before by admission to its wards.



## CONDITIONS REQUISITE FOR THE SUCCESSFUL REARING OF INFANTS.

A study of hospitalism, and the strange tendency shown by infants to waste away in apparently congenial surroundings, naturally leads to an inquiry regarding its causes. This in turn leads to an inquiry regarding the conditions essential to the successful rearing of infants. These conditions may be considered under three general headings, succinctly stated by Holt as "care, fare, and air."

The care of the infant involves the important subjects of clothing, housing, and personal hygiene. By modern methods perfection in clothing has been almost attained. Perfect personal hygiene may also be obtained. In the changeable and hostile climate of northern latitudes perfection of environment is almost impossible. In the home the very important question of exercise for an infant may be successfully settled. The healthy infant, when awake, is in constant motion. A certain amount of handling and changing of position is almost necessary for good health. This, it is true, may be easily overdone, but the holding in the arms and fondling which an infant receives from a judicious mother or nurse is decidedly beneficial. It is certain that nature never designed that a baby should lie quietly in a crib from morning to night.

The subject of infant feeding is altogether too large to be entered upon in this place. It is sufficient to say that it is not enough that the general plan of artificial feeding be good. Eternal vigilance is also necessary, lest the details be neglected. The life of many a delicate child has been sacrificed by the neglect of apparently trivial details, where the general plan has been beyond criticism.

If an infant requires one thing more than another it is air—fresh air, pure air, and plenty of it. Because the baby is small, it is often thought that it requires but little air space. As a matter of fact, an adult will thrive in a smaller air space than will an

infant. The clothing and hygienic care may be perfect, the food the best that can be obtained, but if a child is confined in a small and poorly ventilated room, it will not thrive. It is quite true that many children seem to thrive under very unpromising conditions, but the conditions necessary for the successful rearing of the average baby are many, and the details are legion. The man of one idea can never be a successful pediatric practitioner. For the infant more than for the adult the general plan of management must be wise and judicious, and the multitudinous details must be carried out with unremitting care.

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### ARE THESE CONDITIONS FULFILLED IN INFANTS' HOSPITALS?

This question cannot be answered in a single sentence. Some of the many conditions are fulfilled to perfection, others very inadequately. The clothing and bedding are usually good; frequently they are of the best. Heating, lighting, and hygienic arrangements are often as perfect as skill can make them. Personal care, however, is frequently inadequate, owing to an insufficient number of nurses.

Personal care involves much; it is not limited to a bath in the morning, to changing the napkins, and to preparing a bottle at stated intervals. Every child should be taken in the arms when it is fed, and should be held until the feeding is completed. Feeble children should be frequently turned in their cribs, and kept in proper positions. All children should receive adequate opportunity for exercise of the limbs. All this requires constant attention. Dr. Chapin is very moderate when he says that one good nurse should be supplied to not more than four or five sick infants, and in some cases one nurse may be required for only two patients. Improper care of infants is far less common in hospitals than inadequate care. Lack of an efficient nursing force is one of the important causes of hospitalism. When the nurses are incompetent or indifferent, the results are always shown in the death rate.

Improper diet is the cause of many deaths in hospital children. Every physician has experienced the difficulty of impressing nurses with the importance of care in every detail of feeding. It is almost impossible to obtain a sufficient number of nurses for a large hospital, each one of whom will appreciate the vital importance of details, and will be strictly conscientious in carrying them out. After the greatest care has been exercised in obtaining a perfect milk supply, and instituting a perfect system in the diet kitchen, the ward nurses must be relied upon to handle the milk and administer it properly to the children. At some point in the long line between the dairy and the babies, error or carelessness is liable to creep in with its disastrous results. Unremitting vigilance on the part of some one is necessary to insure safety to the infants.

Ventilation and air space is another subject of cardinal importance in the hospital management of sick children. Every detail in hygiene and nursing may be perfect, the feeding may be of the best, but if the children are crowded too closely together, hospitalism is almost certain to appear. Large air space alone, however, is not sufficient; it will be futile if proper appliances for ventilation are not provided. But without generous air space, proper ventilation is almost impossible. The babies' ward should be broad and high, to give sufficient space in cubic feet. But this measurement alone may be misleading if the cribs are placed too close together, side by side. Adequate floor space is also indispensable. The eighty-one square feet of floor and 1215 cubic feet of air allowed for each child by the Edinburgh Royal Hospital for Sick Children is none too much. Twelve hundred cubic feet must be considered the minimum compatible with safety; 2000 cubic feet, as allowed by St. Luke's Hospital of New York, is far better.

There can be no doubt that the failure of many hospitals to obtain proper results has been largely due to this single cause—overcrowding. Beautiful buildings, good nursing, and adequate feeding, will be unavailing if the babies are crowded together



without sufficient air space and proper ventilation. Hospital babies will continue to perish until they receive in generous amount each of the three great requisites for their proper maintenance—care, fare, and air.

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### OBSTACLES ENCOUNTERED BY INFANT HOSPITALS.

Before a hospital is condemned upon its death rate, the class of cases it receives should be considered. The charity or foundling hospital of a large city receives many cases beyond the possibility of human aid. Many are in the last stages of marasmus, or other fatal disease. Many are the offspring of diseased, drunken, or vicious parents, and are without constitutional stamina.

The last report of the Babies' Hospital of New York refers to this subject in the following words:

“Fully two-thirds of the babies under six months old, who are brought to the Hospital, are suffering from marasmus when we first see them. Unless you have been in the receiving ward, and heard there the tale of poverty, often destitution, neglect, starvation, and, not infrequently, abuse, at the hands of a drunken father or husband, which accompanies these little waifs when they are finally landed at our doors—unless you have seen and heard for yourself, you can form but a faint conception of what the previous life of these children has been, or, in many cases, what their mothers have suffered before they were born.”

At this same hospital careful investigation showed that over half of the patients received under six months of age had been systematically drugged with opium in the form of paregoric or soothing syrup. Too much should certainly not be expected from a hospital with such material to work upon. However, if a hospital is devoted to true charity, no sick child whose disease is not contagious is turned away, and it is very unjust to judge by the mortality rate of the good accomplished.

The class of patients received by an infants' hospital is pecu-

liar. There are many general hospitals to which people of means repair during illness, or for surgical operations. The private apartments in some of these institutions are sumptuous, and command a large price. The inmates of an infants' hospital, however, are always charity patients, for no mother will surrender her child who can give it suitable care at home, nor will she enter a hospital with it. Many of the infants are orphans or foundlings, or the children of drunken and criminal parents. Very few have received the care which is received by the child seen in ordinary private practice, and the results are only too apparent. The foundlings and orphans cannot be sent home when convalescence is established, but must be retained in the hospital without regard to consequences. On the whole, the inmates of an infants' hospital are far inferior in constitution, and in the ability to withstand disease, to those received by the average general hospital. This is without question an important element in causing the large death rates common to those institutions. It should not be forgotten, moreover, that the mortality of all children during the first year of life is many times greater than that of any other similar period.

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The very extensive programme of the Pediatric Section of the American Medical Association gives promise of sessions of the utmost interest. This programme was published in full in the last issue of the ARCHIVES. The range of subjects is wide, but diphtheria and the antitoxin treatment will evidently receive their full share of attention, one complete session being devoted to that subject. Feeding and hygiene will also receive considerable attention. The same is true of tuberculosis and the wasting diseases. If the meeting fulfills the promise given by the programme it will certainly be one of the most successful in the history of the Pediatric Section.

## Bibliography.

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**Intestinal Intoxication in Infants.** By F. W. Forbes Ross, M.D., *Clinical Assistant, Children's Hospital, Paddington Green.* London: Rebman Publishing Company. 1897. Pp. 150. Price 7s. 6d.

This is an attempt to elucidate a very important subject. Although the book contains many points of great practical interest, and is well filled with important facts, they are so poorly arranged as to lose much of their value. They are, moreover, so smothered in peculiar and visionary theories as to be almost worthless as a guide to the practitioner. The time of the average medical man is too much occupied to permit him, had he the inclination to attempt the task, to sift facts from theory when they are so inextricably mixed.

**Annual of the Universal Medical Sciences and Analytical Index.** A Yearly Report of the Progress of the General Sanitary Sciences Throughout the World. Edited by Charles E. Sajous, M.D., *Paris, and Seventy Associate Editors.* Illustrated with Chromo-lithographs, Engravings and Maps. Five Volumes. 1896. Philadelphia, New York, and Chicago: The F. A. Davis Co. Price, \$15.00.

This great work fully maintains the standard of former years, and is the most complete and elaborate yearly review of medicine published. The articles cover a very wide field, no department of medicine being wholly neglected. Pediatrics, however, receive very scant attention. One section of seventy-four pages is devoted to infectious diseases, one of fourteen pages to intubation, and one of thirty-two to the dietetics of infancy and diseases of the new-born. The review of diphtheria is very extensive. Owing to the long time which must elapse between the preparation of the manuscript for such an elaborate work as this and its publication, an article upon a disease like diphtheria, upon which our knowledge is so rapidly changing, cannot be satisfactory. The article on diphtheria is based entirely upon work done in 1894 and 1895. It cannot, therefore, be considered of value as showing the most recent knowledge upon the disease. The section on infant dietetics is well done, and covers the ground well. Aside from these chapters, the wide field of pediatrics received but scant attention.

One of the most valuable portions of the work is the analytical index and cyclopædia of treatment, to which 327 pages are devoted. The indexes, in fact, have been in the successive issues a most notable feature, and have done much to render the work valuable to the practitioner.

## Society Reports.

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### NEW YORK ACADEMY OF MEDICINE—SECTION ON PEDIATRICS.

Stated Meeting, April 8, 1897.

J. HENRY FRUITNIGHT, M.D., CHAIRMAN.

#### EXOPHTHALMIC GOÏTRE TREATED BY THYMUS GLAND.

DR. CHARLES E. NAMMACK presented a case of this kind, occurring in a woman of twenty-five, who had begun to suffer from palpitation as long as ten years ago. On examination, the pulse had been found to be 144, the apex beat was feeble, and displaced downward and to the left; the exophthalmos was distinct; there were no cranial nerve palsies. According to her statements, she had had frequent attacks of profuse perspiration, and there had also been a transient albuminuria. Recently the palpitation and dyspnœa had been on the increase. She had been put on thymus tablets, and the dose had been increased from eight to seventy-two grains, or from one to nine tablets. While there had been no noteworthy diminution in the measurement of the neck, the exophthalmos had diminished, and the tremor had been very decidedly lessened.

DR. A. D. ROCKWELL said that his treatment was founded on the neurotic theory of thyroid goitre. About sixty cases had come under his observation, and many of them had developed after emotional disturbances. He felt that the very general neglect of the electrical treatment of thyroid goitre was unmerited—it was his chief reliance, although proper attention was, of course, given to the hygienic and dietetic management. It was advisable to use a current of from 60 to 100 milliampères, and this could be very readily done if one made use of an electrode of sculptor's clay.

DR. H. L. TAYLOR said that as Dr. Louise Fiske Bryson had called attention to the fact that in these cases there was almost always a decided diminution of the chest expansion, he would like to know if this point had been noted in Dr. Nammack's case.



DR. NAMMACK replied that the so-called "Bryson symptom" had been carefully reviewed by Dr. Patrick, of Chicago, who had, as a result, concluded that it was chiefly due to the loss of muscular power, and was an unimportant symptom.

CONGENITAL ANKYLOSIS OF THE SHOULDER AND ELBOW JOINTS OF BOTH  
ARMS.

DR. HENRY LING TAYLOR presented a case in which this was apparently the condition present. The baby had first been seen at the Hospital for Ruptured and Crippled when only six weeks old. The mother stated that at the birth of this child the feet came first, and the arms were extended above the head; also that there was a prominence over the shoulder, which the physician reduced, and then applied a bandage. There was also suspended animation. The chief feature of the case was the peculiar position of the elbows and hands. Dr. Taylor said that while a well-known neurologist had ventured the opinion that this was a double birth palsy, it was certainly different from any birth palsy that he had ever seen, inasmuch as the stiffness at the elbows could not be overcome by any reasonable force. A skiagraph had been taken, but did not seem to reveal any abnormality.

DR. MARY PUTNAM JACOBI.—During early intra-uterine life the cartilaginous portion of the arm and forearm are rendered continuous with each other by uniting connective tissue. Later, this is absorbed, and a cleft is formed, which ultimately develops into the elbow joints. The deformity in this case seems to me due to an aberration of development, whereby the connective tissue, instead of being reabsorbed, has shared with the cartilage in originating osseous tissue, and this has therefore become continuous throughout the limb.

DR. REGINALD H. SAYRE said that the skiagraph apparently showed less than the normal amount of cartilage in the elbow joint, and also a slight overlapping of the humerus by the ulna. For this reason he thought the treatment should be begun by the use of traction.

DR. A. E. GALLANT said that he had met with a number of cases in which subluxation of the radius had resulted from efforts at artificial respiration immediately after the birth of the child. He believed that this was the condition in the case just presented.

## CONGENITAL DISLOCATION OF THE SHOULDER JOINT.

DR. F. TILDEN BROWN presented a child who had been born last October, after a normal and easy labor. It was noticed that immediately after birth the right arm hung flaccid, and was painful when moved. When he first saw the child the arm was rigid, and the head of the humerus could be rotated under and somewhat posterior to the acromion process. A skiagraph revealed the head of the humerus partly out of its place. Failing in the attempt to reduce the dislocation under anæsthesia in the usual way, the part was exposed by an anterior incision, and then the reduction was readily effected.

## INFANTILE ATHLETICS.

DR. HENRY LING TAYLOR, in a paper with this title, called attention to the proportionately greater effect of exercise in children than in adolescents or adults, and pointed out their value. But during the second year, he said, the child should be guarded against too much exercise, and should be made to take a nap every day. Dr. Galbraith had already referred to the strain to which the infant was subjected in learning to walk, and had pointed out the significant fact that it was just at this time that anterior poliomyelitis was most apt to appear. Dr. Taylor advised that infants should go barefoot until the time walking arrived, as in this way the circulation was better maintained, and the development of the foot unimpeded. Neither man nor child could attain the best development in a sultry atmosphere, and hence the child should be allowed to tumble around while freely exposed to the air. This "air bath" should be taken twice a day. While free exercise was desirable, evil frequently resulted from forcing children to sit up at too early an age, or coaxing them to walk too soon.

## CONGENITAL DISLOCATION OF THE SHOULDER—ITS DIAGNOSIS AND TREATMENT.

DR. A. M. PHELPS presented a communication on this subject. He stated that the first case of this kind that he had ever seen had been a boy of eight years, who had been referred to him by Dr. Dudley in 1895. In this case the humerus had been dislocated back underneath the spine of the scapula since birth, and the boy could not put his hand to his mouth. Pronation and supination were normal; the arm was rotated inward; the palm

was turned posteriorly; there was a bony prominence just below the spine of the scapula. Finding that neither Dr. Lewis A. Sayre nor Dr. W. T. Bull had ever met with such a case, a consultation was held, and it was decided to cut down upon the joint. This was done, and it was found that the posterior border of the glenoid cavity had disappeared, and that this cavity was only about two-thirds of the normal size. A portion of the head of the humerus was then cut away and rounded off, so that the head fitted the original socket. After removing some of the redundant capsule posteriorly, it was sutured with kangaroo tendon, and the joint was drained for a week. The limb was dressed with the elbow thrown well back. The result was almost perfect.

Dr. Phelps said that the first and only one who had carefully described congenital dislocation of the shoulder was Dr. R. W. Smith, in 1839. He had operated upon four such cases, and had been able to find records of only two other operations. In three of his cases there was a history of difficult labor, and examination revealed a fracture of the glenoid cavity. For these reasons he was inclined to the opinion that the condition resulted from traction on the bone or in the axilla, or from some similar violence at birth.

DR. R. H. SAYRE cited the case of a little child of six months, who had paralysis of one arm. The history stated that it had been unable to move this arm immediately after birth. A skiagraph revealed a fracture of the glenoid cavity, and an overlapping of the fragments. As Dr. Phelps had seen four of these congenital dislocations in a short time, it must be that heretofore this condition had been overlooked or erroneously reported.

DR. A. PALMER DUDLEY explained that owing to his being an intimate friend of the family in which Dr. Phelps' first case had occurred, he had been able to obtain a careful and detailed history. He also knew the obstetrician, and had reason to believe that he had used great violence in delivering the shoulders of this child. One year after the operation the boy was able to suspend himself by the affected arm from the spring-bar of a gymnasium.

DR. PHELPS, in closing the discussion, said that a total of twenty-one cases were on record, with six operations.

## THE PEDIATRIC SOCIETY OF PHILADELPHIA.

Stated Meeting, April 13, 1897.

J. P. CROZER GRIFFITH, PRESIDENT.

DR. THOMPSON S. WESTCOTT reported a case of influenza with persistent respiratory failure in an infant. When four weeks old the child contracted influenza and became acutely ill with signs of broncho-pneumonia at the root of the right lung. Eight hours later there commenced a series of attacks characterized by a slow spasmodic closure of the glottis, associated with slight general convulsive symptoms, and later by recurring spells of apnœa. The attacks yielded at first to the warm bath and flagellation, but later required, besides, cold affusion to the chest, more severe flagellation with strips of pasteboard over back, buttocks, and finally over cheeks and side of head, oxygen inhalations, and artificial respiration by the Schultze method. Up to midnight of the first day 29 distinct attacks had been counted, and during the next twelve hours fully as many occurred. The treatment embraced bromides until complete relaxation was obtained, digitalis and atropine sulphate hypodermatically. After 30 hours one-half grain of antipyrin hypodermatically was given, with what seemed to be immediate improvement, and after six hours the child was practically out of danger, except for the general weakness which threatened to render efforts at cough ineffectual. Under stimulating treatment, complete recovery followed. Three doses of antipyrin were given, the last one about sixteen hours after the more severe symptoms had subsided, when the tendency to cyanosis again became alarming. This was followed by a prompt and definitive cessation of all alarming respiratory symptoms.

### DISCUSSION.

DR. F. A. PACKARD.—This case is interesting in connection with the discovery of Guiteras and White of distinct lesions of the pneumo-gastric nerve. This would explain many of the symptoms present in Dr. Westcott's case.

DR. ALFRED HAND.—I saw this case for a time, but there was nothing for me to do except to watch the child. The effect of antipyrin in controlling the attacks was wonderful, and this strengthens the view that they were centric in origin. The one



attack of respiratory failure that I saw, a very mild one, seemed to be centric.

DR. WESTCOTT.—It is quite possible that the child was beginning to get better before the antipyrin was administered. I am now inclined to attach rather more importance to that fact than I was at the time I began its administration. It seemed, however, as if there was no hope at all. I am well aware that in children sometimes, especially in cerebral conditions, marvelously rapid changes take place in the circulatory conditions. As to the point raised by Dr. Packard I feel inclined to maintain, in view of the positive evidences of cerebral involvement and their rapid subsidence, in conjunction with the residual strabismus and the occurrence of at least one cerebro-spinal convulsion, that the principal seat of the lesion was at the base of the brain, though the existence of some pneumo-gastric disturbance cannot be positively denied.

DR. E. E. GRAHAM presented a child with natal teeth and said: The child is about four weeks of age. The tooth, which is a lower right central incisor, was noticed by the nurse a few hours after birth. Dr. Irwin saw it on his next visit, so there is no question that the tooth was present at birth. It is rather badly formed, the cutting edge is slightly conical and it is rather a poor color. There is no evidence of any unusual bony developments. The father claims that either he or one of his brothers also had teeth at birth. It is a family record that one of the children was born with teeth. Curiously enough, the mother claims the same thing, that either she or her sister was born with a tooth.

DR. J. MADISON TAYLOR said that he had seen two such cases, in one of which he had extracted the tooth, as it lacerated the nipple of the mother.

DR. FRANCIS R. PACKARD reported a case in which a callus had been left after the extraction of such a tooth, which caused deflection of the natural tooth when it appeared later.

DR. ROSENTHAL.—I have seen a number of such children. The teeth seem to wear down, and remain for two or three years, and then drop. I have never observed that they give trouble.

DR. TAYLOR.—The tooth I removed was quite loose, and could be of no service to the child, and lacerated the mother's nipple.

DR. J. P. C. GRIFFITH.—Shakespeare refers to Richard being born with teeth, and that accounted for his savage nature.

DR. GRAHAM.—In the majority of cases these teeth are loose, badly formed and drop out. It is hardly necessary to remove them in the majority of cases. I think they should not be removed unless they are doing damage to the breast of the mother.

DR. J. MADISON TAYLOR presented a case of recovered concurrent typhoid fever and tuberculosis, the patient being a girl of ten years. She passed through a well-marked attack of typhoid fever, during the course of which acute tuberculosis of the lungs manifested itself, producing profound prostration and emaciation. The child was apparently perfectly well, having gained thirty pounds in weight, the pronounced lesions distinctly demonstrable in the right lung and the lesser lesions in the left lung being now healed. At one time a bronchus was perforated and a large amount of foetid pus and fragments of lung tissue were expectorated.

DR. J. M. O'MALLEY read a paper on typhoid fever in children, with report of a family epidemic.

DR. J. P. CROZER GRIFFITH read a paper upon foetal typhoid and the Widal reaction in the new-born. He reviewed some of the infectious diseases in which there was reason to believe that an attack might occur in utero. There have been cases reported in which typhoid bacilli have undoubtedly been found in the foetal tissues. Finally he referred to the few experiments which have been made with the Widal test in the blood of the foetus and new-born, and reported a case in which he had obtained a positive reaction in the blood of a child born from a typhoid mother.

DR. JOSEPH LEIDY reported a case of typhoid fever with persistent high temperature in a child of three years. For four weeks the temperature ranged between  $103^{\circ}$  and  $104^{\circ}$ , and at times went as high as  $105^{\circ}$  and  $106^{\circ}$ . At the end of the fourth week the temperature slowly began to fall. At this time the case presented the appearance that a typhoid generally does at the beginning of convalescence.

DR. J. H. JOPSON reported a case of suppurative osteomyelitis of the tibia in the course of typhoid fever in a child aged two and a half years in the service of Dr. H. R. Wharton at the Children's Hospital. The entire diaphysis of the tibia was removed as a sequestrum in one piece. The patient suffered from continuous high fever from the time of admission, and finally died of septic pyæmia. Autopsy showed besides areas of necrosis in the viscera and catarrhal pneumonia, what were apparently healing typhoidal ulcers in the intestine. The suppurative osteomyelitis was probably post-typhoidal, the result of a mixed infection. It has been shown in these cases that the Eberth bacillus alone may cause a form of osteomyelitis, usually circumscribed and terminating either in resolution, caseation, or liquefaction, in the latter cases with or without the production of small sequestra.

DR. A. O. J. KELLY reported a case of typhoid fever in a child of twenty-five months. The mother had suckled the baby during the first two weeks of a course of typhoid, and died in the same hospital four days before the child's admission. When

the baby came under observation, it was irritable, slept badly, and had anorexia, coated tongue, fever and diarrhœa. The abdomen was distended, the spleen palpable, spots were present, and there was gurgling. There were no complications, and the child was discharged well after three weeks. The temperature was markedly irregular, showing diurnal variations of as much as  $4.5^{\circ}$ , and sometimes showed the normal type, being lowest in the evening. It reached normal on the eighth day after admission, after rapid lysis, but showed slight variations for a week later.

DR. E. ROSENTHAL said that it had been his experience to see typhoid in children, mostly after the age of two years. He could only record one case of an infant that had typhoid fever. The mother contracted typhoid, and the child's symptoms were very suggestive of the same disease. After weaning and placing upon suitable diet and treatment it made a good recovery. It was about three months old. In children he had usually seen marked nervous symptoms in typhoid fever.

DR. MILLER.—It seems to me, in view of the statistics of Dr. Northrup of the New York Foundling Hospital, and they must be very accurate, we ought to be very cautious in making the diagnosis of typhoid fever in infants. I have seen a great deal of typhoid fever in children, but I have never seen a case under three years of age. Unless we can find the rose spots and have a more or less typical fever I do not think we are justified in making the diagnosis in infants. Nor are we helped either at the *post-mortem* table. The fact of enlarged solitary follicles, enlarged Peyer's patches, and enlarged spleen are not sufficient to establish a diagnosis of typhoid fever *post-mortem*. I had abundant opportunity to verify this in making a number of autopsies at the Sheltering Arms, with which I was once connected. The similarity of the lesions of children dying from intestinal catarrhs with the lesions of typhoid fever is striking. We have the swelling of the solitary follicles, Peyer's patches, and of the adjacent lymph glands. Dr. Arthur V. Meigs has pointed this out, and some years ago at the Pathological Society he presented specimens from the same institution showing this same point.

DR. LEIDY.—I confined my remarks entirely to the temperature of the case which I reported, without going into the symptoms. The nervous symptoms of this case were classical. The aphasia in the fourth week was marked. There were two adults in the same family who had suffered from typhoid fever and had made excellent recoveries. There were no complications beyond those noted.

D. L. EDSALL, Recorder.



# MINUTES OF THE NINTH ANNUAL MEETING OF THE AMERICAN PEDIATRIC SOCIETY,

Held at Washington, D. C., May 4, 5, and 6, 1897.

## FIRST DAY—*Morning Session.*

The President, Dr. Samuel S. Adams, called the meeting to order at 10:15 in Prof. Huntington's room of the Columbian University. The minutes of the last meeting were approved as published.

The following members were present:—G. N. Acker, M.D., Washington; S. S. Adams, M.D., Washington; W. D. Booker, M.D., Baltimore; D. Brown, M.D., New York; W. L. Carr, M.D., New York; H. D. Chapin, M.D., New York; F. M. Crandall, M.D., New York; E. P. Davis, M.D., Philadelphia; R. G. Freeman, M.D., New York; J. H. Fruitnight, M.D., New York; J. P. C. Griffith, M.D., Philadelphia; L. E. Holt, M.D., New York; A. Jacobi, M.D., New York; C. G. Jennings, M.D., Detroit; C. G. Kerley, M.D., New York; Henry Koplik, M.D., New York; W. F. Lockwood, M.D., Baltimore; F. G. Morrill, M.D., Boston; W. P. Northrup, M.D., New York; J. O'Dwyer, M.D., New York; W. Osler, M.D., Baltimore; F. A. Packard, M.D., Philadelphia; B. K. Rachford, M.D., Cincinnati; T. M. Rotch, M.D., Boston; I. M. Snow, M.D., Buffalo; L. Starr, M.D., Philadelphia; W. P. Watson, M.D., Jersey City; J. C. Wilson, M.D., Philadelphia; L. M. Yale, M.D., New York.

The President's annual address, entitled "The Evolution of Pediatric Literature in the United States," was read by Dr. Samuel S. Adams of Washington.

Dr. J. C. Wilson, Philadelphia, read a paper entitled "A Case of Tic Convulsif."

Dr. William D. Booker, Baltimore, read a paper entitled, "A Case of Congenital Diaphragmatic Hernia, Associated with Recurrent Attacks Simulating Asthma Dyspepticum."

Discussion by Drs. O'Dwyer, Fruitnight, Rotch, and Booker.

Dr. J. P. Crozer Griffith, Philadelphia, reported "Two Cases of Unilateral Tremor in Children."

Discussion by Drs. Rotch, Holt, and Griffith.



Dr. J. Henry Fruitnight, New York, read a paper on "A Frequent Significance of Epistaxis in Children."

Dr. George N. Acker, Washington, reported "Two Cases of Meningitis, Apparently Tuberculous, with Recovery."

Discussion by Drs. Jacobi, Holt, Brown, and Acker.

Dr. Joseph O'Dwyer, New York, reported a case of "Congenital Laryngeal Stenosis."

Discussion by Drs. Holt and O'Dwyer.

#### SECOND DAY—*Morning Session.*

Dr. William Osler, Baltimore, read a paper entitled, "Adherent Pericardium in Children."

Discussion by Drs. Jacobi and Osler.

A paper by Dr. B. Scharlau, New York, was read entitled, "Synopsis of Fifty-Eight Cases of Empyema Operated Upon During 1896 in the Children's Service of Mount Sinai Hospital."

Discussion by Drs. Chapin, Holt, Northrup, Osler, Jacobi and Koplik.

Dr. A. Jacobi, New York, read a paper on "Sarcoma of the Skin in the Newly-Born."

Discussion by Drs. Carr, Freeman, Northrup, and Jacobi.

Dr. L. Emmett Holt, New York, read a paper entitled, "Abscess of the Brain in Infancy, with Report of Three Cases."

Discussion by Dr. Northrup.

Dr. F. Gordon Morrill, Boston, presented a paper entitled, "A Brief Analysis of One Hundred Cases of Frank Pneumonia."

Dr. Floyd M. Crandall, New York, read a paper on "Hereditary Tendency in Pediatric Practice."

Dr. B. K. Rachford, Cincinnati, read a paper on "Lithæmia in Children."

Discussion by Drs. Holt, Jacobi, Rotch, Crandall, and Rachford.

Dr. Charles G. Kerley, New York, reported a case of "Exophthalmic Goitre Apparently Cured by the Use of Thyroid Extract."

Dr. Henry Koplik, New York, read a paper on "The Use of Thyroids in Diseases other than Cretinism."

#### THIRD DAY—*Morning Session.*

Dr. J. P. Crozer Griffith, Philadelphia, reported a case of "Retro-Œsophageal Abscess."

Discussion by Drs. Chapin, Koplik, Rotch, Adams, and Griffith.

The report of the Committee on "The Collective Investigation of the Antitoxin Treatment of Laryngeal Diphtheria in Private Practice" was read by the Chairman, Dr. W. P. Northrup.

Discussion by Dr. Brown.

Dr. Joseph O'Dwyer, New York, read a paper entitled, "Retained Intubation Tubes: Causes and Treatment."

Discussion by Drs. Northrup, Jennings, and O'Dwyer.

Dr. T. M. Rotch, Boston, reported a case of "Diphtheria of the Eye."

Dr. Myles Standish, of Boston, made some remarks upon the ophthalmological conditions of the case.

Dr. Rotch then read the report of "A Case of Laryngeal Diphtheria with Intubation under Antitoxin Treatment."

Discussion by Drs. Northrup, Rotch, Yale, and Rotch.

Dr. Henry Koplik, New York, exhibited an "Apparatus for the Rapid Diagnosis (Bacteriological) of Diphtheria."

Dr. Edward P. Davis, Philadelphia, read a paper entitled, "Pre-Natal Infection Causing Diseases which Develop During the First Month of Life."

Dr. Irving M. Snow, Buffalo, reported a case of "Acetanilide Poisoning in a Newly-born Infant—Absorption from Umbilical Wound."

Dr. T. M. Rotch, Boston, presented a colored sketch of a specimen of ileo-colitis.

Dr. Rowland G. Freeman, New York, presented an improved nursing bottle.

The following papers were read by title:

"Antitoxin and Intubation in the Treatment of Diphtheritic Croup," by J. Lewis Smith.

"Varicella Gangrenosa, a Case," by W. F. Lockwood.

"Clinical Histories and Autopsies of Certain Types of Disease in Infants and Children," by William P. Northrup.

"A Case of Göitre Treated by Thyroid Extract," by Francis Huber.

"A Case of Suppurative Nephritis," by Rowland G. Freeman.

"Fatal Cases of Typhoid Fever in Early Life," by Henry D. Chapin.

“Retarded Development of Inferior Maxilla, Due to Injury by Obstetric Forceps,” by Francis Huber.

“The Prophylaxis of the Complications of the Exanthemata,” by C. G. Jennings.

“Presentation of Specimen Showing Congenital Deformity of the Biliary Ducts,” by Charles P. Putnam.

#### EXECUTIVE SESSION.

On nomination of the Council the following officers were elected:

*President*, - - L. EMMETT HOLT, M.D., New York.  
*First Vice-President*, HENRY KOPLIK, M.D., New York.  
*Second Vice-President*, CHARLES G. JENNINGS, M.D., Detroit.  
*Secretary*, - - SAMUEL S. ADAMS, M.D., Washington.  
*Treasurer*, - - FREDERICK A. PACKARD, M.D., Philadelphia.  
*Recorder and Editor*, FLOYD M. CRANDALL, M.D., New York.  
*Member of Council*, CHARLES P. PUTNAM, M.D., Boston.

Infantile Scorbutus was proposed by the Council as the next subject for collective investigation and the following committee was nominated: W. D. Booker, J. P. C. Griffith, C. G. Jennings, A. Caillé, J. L. Morse. The suggestion of the Council was approved and the Committee was elected by the Society with instructions to report at the next annual meeting.

Cincinnati was selected as the next meeting place, the time of meeting to be determined at a later date by the Council.

New members were elected as follows: Dr. F. H. McCollom, Boston; Dr. J. P. West, Bellaire, O.; Dr. E. E. Graham, Philadelphia; Dr. Harold Williams, Boston; Dr. Churchill, Chicago.

FLOYD M. CRANDALL, M.D., *Recorder*.

## Current Literature.

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### MEDICINE.

**Griffith, J. P. Crozer: Idiopathic Osteopsathyrosis (Fragilitas Ossium) in Infancy and Childhood.** (*American Journal of the Medical Sciences.* 1897. Vol. cxiii. No. 4.)

The author gives an extended report of a case of this disease occurring in his own practice and a brief report also of sixty-six cases recorded in literature. These cases are divided into three groups—those showing direct inheritance, those showing family predisposition, isolated cases, and isolated cases with some element of doubt.

Several varieties of osteopsathyrosis may be distinguished. It may be either symptomatic to other affections, or occurring idiopathically—*i.e.*, not associated with any discoverable cause. The symptomatic form depends upon various conditions. For instance, rhachitis is capable in many instances of occasioning actual transverse fracture, as well as great bending of the bones. Osteomalacia likewise may produce fractures, and sometimes to such an extent that an *osteomalacia fracturosa* (Kilian), has been described. Cases of fragilitas due to scurvy have also been reported, and it is possible that some of the instances of brittle bones in infants may be attributable to it. Syphilis has long been considered a cause of osteopsathyrosis. It is a disputed point whether congenital syphilis may occasion a general brittleness of the whole osseous system, depending upon some unrecognizable change in the structure of the bone, or whether the fractures are always the result of localized gummatous processes. There certainly seems to be good grounds for believing that at least most of the cases of fragilitas attributed to the general effect of syphilis are so attributed without good reason. Simon believes that both hereditary syphilis and scorbutus are more apt to occasion separation of the epiphyses.

There are, further, a whole series of causes which probably produce atrophy of the bone and consequent fragility. Many of these are of a distinctly nervous nature. Thus we find fragility sometimes developing in locomotor ataxia, poliomyelitis, and



mental diseases. There are also atrophic changes resulting from simple inactivity, and those commonly attending old age. There is some question, however, whether the fractures which so often and so easily occur in old persons depend always on fragilitas, or whether they are not in many cases brought about by the diminished power old persons have of guarding themselves against falls and other accidents capable of producing fractures.

Finally, there is a series of local causes for fragilitas, among them osteomyelitis, carcinoma or other malignant growth of the bone, gummata, echinococcus or other cysts, and localized necrosis.

It is, however, only of idiopathic osteopsathyrosis that the author writes, and, to narrow it still more, only with those cases in which the disease begins in infancy or childhood.

As the name idiopathic implies, the histories of the cases collected throw little light upon the cause of the disease. The influence of *heredity* is the only point which strikes us forcibly, inasmuch as direct inheritance, or at least a family tendency, was shown in eighteen of the sixty-seven reports. This influence of inheritance is so marked that Gurlt has compared the affection to hæmophilia, and Moreau to progressive muscular dystrophy. There is a distinct difference in the line of inheritance, the influence of the male greatly predominating.

In the matter of the etiological influence of *sex*, the accounts are not sufficiently accurate to allow of any reliable figures being given, since in many cases the sex of the children was not stated. As to the *age*, there is a decided tendency for the affection to begin early in life. There are a number of cases reported which began later; in many instances fractures occurred before birth; in still more they appeared a little later, and in a few the fragility developed only as growth advanced.

It is worthy of note that the amount of *force* required to produce fractures was nearly always very slight, and sometimes remarkably so. Among the causes mentioned are going upstairs, leaning over, turning around, being moved in bed, tripping, turning in bed, the slightest fall.

An interesting feature of the affection is that in nearly all cases union of the broken bones was prompt, and generally remarkably so. Sometimes the fragments united so readily that professional advice was not even sought for. This rapidity of union has been pointed out by many writers.

The symptoms consist in the occurrence of numerous fractures from insignificant causes. As a rule, the accidents are painful as in fractures in any other condition. In a few cases, however, it is stated that pain was slight. Pain preceding a break, such as may occur in osteomalacia, is entirely foreign to osteopsathyrosis. As to the bones most frequently affected, it is noticeable that the long bones of the extremities, as well as the clavicles and ribs, are those oftenest broken, and that fractures are especially frequent in the lower extremities.

The prognosis is, as a rule, very unfavorable. The duration of life does not seem to be materially affected by the disease, but the tendency to fracture, once established, is apt to continue unabated. We may, however, always base a hope of improvement on the fact that a certain number of cases have distinctly outgrown the disposition to fracture.

In such a disease, in which both the cause and the nature are so little known, it is evident that the treatment can be but experimental. The administration of alteratives of various sorts, the maintenance of the best general health, and the protection of the limbs against fractures are the indications most apparent, with the hope that as time passes the fragility may be outgrown. Still, while guarding against injury, we must at the same time see that the muscles do not waste. It is likely that a proper lack of muscular support to the limbs may itself increase the tendency to fracture. It is important in case of fracture to secure union of the fragments in proper position, in order to prevent malposition as far as possible. A number of cases have thus reached adult life with but little deformity; while others have grown badly misshapen for want of proper care.

**Rumbold, Thomas F.: Nasal Symptoms that Resemble Other Diseases in Infants.** (*Atlanta Medical and Surgical Journal.* 1897.)

In a paper on this subject the author says that it is evident to every medical man that severe nasal inflammation must produce deranging effects in the infant's organism. Some symptoms that are purely secondary to nasal disease, are named as symptoms of another disease by physicians who have given but little attention to mucositic inflammation of the nasal passages. It is not uncommon to see an infant that has been suffering for some weeks from nasal inflammation, treated for malarial fever, and as the

remedies that are beneficial in malarial fever are also relieving to an advanced nasal inflammation, the recovery is taken as proof of the correctness of the diagnosis. But a close examination of the most prominent symptoms of the two diseases will show that there is a marked difference.

In cases with symptoms resembling those of malarial fever, but due to nasal inflammation, there is not engorgement of the spleen nor enlargement of the liver, as is found in about ninety per cent. of malarial cases. In nasal cases there are no paroxysms due to exposure, while in malarial fever paroxysms are regular. In malarial fever, during the period of incubation, there are no symptoms, the patient appearing in perfect health; in nasal cases, there is no time in which the patient is not under the debilitating influence of nasal inflammation. In nasal disease, on a bright, clear day the patient is improved in health; with the malarial case, a bright, clear day does not check his paroxysms.

If the nasal case has more dangerous symptoms than those usually seen in malarial cases, the complaint is called typho-malarial, or typhoid, or infantile remittent fever; but here again we have distinguishing features that will indicate the true nature of the case: (a) The fact of the secretion being seen in the nasal passages, but not seen in typhoid. (b) Intestinal symptoms, other than hemorrhage, are absent in nasal cases, but not in typhoid. (c) Bronchitis is present in nasal cases, but not in typhoid. (d) Nervous symptoms are marked, and constantly present in nasal cases, but not in typhoid. (e) Intestinal hemorrhage is common in typhoid, but not in nasal cases. (f) In typhoid the temperature has more of a remittent type than in nasal cases. (g) In typhoid the infant's recovery may take place rapidly; in a nasal case such rapid recovery does not take place.

**Thomson, John :** **Congenital Hypertrophy of the Pylorus and Stomach Wall.** (*Edinburgh Hospital Reports.* Vol. iv.)

The author reports two cases of this very rare condition. The first child died at the age of twenty-eight days, and the second at the age of nine and one-half weeks. The morbid condition which was found in these cases, and which was without doubt essentially connected with the death of the patients, was



great hypertrophy of the muscular coat of the pylorus, and of that part of the stomach wall. While the state of the alimentary canal described scarcely affords data sufficient to explain the causation of this hypertrophy fully, certain points seem tolerably clear.

For example, it may be assumed that the increase of muscle must have been the result of over-action. One cannot suppose that muscular tissue could develop like this apart from exaggerated functional activity. And the very great degree of the hypertrophy makes it equally certain that this increased action must have gone on for a long time, and must, therefore, have occurred *in utero*; this is, of course, quite conceivable. Although it is a matter of dispute how much, if at all, the liquor amnii swallowed by the fœtus contributes to its nourishment, it is generally admitted that a large amount of fluid passes normally through the stomach of the fœtus during the later months of pregnancy; and it is reasonable to suppose that its passage occasions a considerable degree of peristaltic action. Excessive or irregular action of the pyloric muscle would inevitably cause some amount of obstruction\* to the outflow of fluid from the stomach, and this would easily account for the hypertrophy of the muscular tissue in the stomach wall.

What has caused this spasm of the pylorus would be very hard to prove, but it might possibly be produced in any of three ways:

(a) By a local lesion, such as an ulcer of the mucous membrane, causing undue irritability of the nerves supplying the pyloric muscle.

(b) By an irritating property in the fluid entering the cavity of the stomach.

(c) By a derangement (probably from faulty development) of the nervous mechanism which regulates the contraction and relaxation of the pylorus under appropriate stimuli.

The first of these may be dismissed at once, because a local source of irritation would have left some trace behind. The second, while more probable, is doubtful, for irritation of the rest of the alimentary canal would also be present. The third proposition is much more probable. If the co-ordination between the stomach walls and pyloric sphincter were disturbed, even a little, both would be continually overworked, and hypertrophy would result.



**Eichhorst: Multiple Sclerosis in Children.** (*Virchow's Archiv.; British Medical Journal.* No. 1877.)

The author claims to have recorded the first indisputable case of multiple sclerosis in a child. Up to the year 1891, only twenty-six cases of supposed multiple sclerosis in children had been recorded, and in only three of these had a necropsy been obtained, which in two cases was only partial and quite inconclusive, and in the third showed diffuse, not multiple, sclerosis. Cases without *post-mortem* evidence are worthless as proof of the occurrence of multiple sclerosis in children, as the disease is closely simulated by other conditions, especially by diffuse cerebral sclerosis and meningeal affections. In Eichhorst's case the disease was congenital and inherited; the boy was born two years after symptoms of multiple sclerosis had appeared in the mother. Slight tremor on voluntary movement was the only symptom noticed until the boy reached the age of eight years, when the disease rapidly progressed and the usual symptoms appeared—namely, tremor on voluntary movement, nystagmus, with optic atrophy, scanning speech and exaggerated tendon-jerks. He died at the age of eight and one-quarter years, and microscopic examination showed small patches of sclerosis in all parts of the cord, but none in the pons or brain. It was interesting that in the mother also, who died from multiple sclerosis a few years later, the patches of sclerosis were found to be limited to the cord.

**Sloan, W. Harpur: Intussusception Due Apparently to an Unusual Cause.** (*Medical Council.* 1897. No. 2.)

The author reports a case of intussusception occurring in a boy of seven years, due apparently to inversion and prolonged standing on the head. The boy had been perfectly healthy until he was stricken down with intense abdominal pain. At the time no other symptoms were present, but in about two hours extreme nausea and vomiting developed, which persisted until death. The vomiting was of a most violent, retching nature, and the matter vomited of a watery character, with a decided faecal odor. About two hours before death a violent dyspnœa appeared, which caused the child to become exhausted in a short time. This condition was followed by a severe hem-

orrhage from the bowels. Death occurred in about ten hours from the onset of symptoms.

A *post-mortem* examination revealed a complete intussusception in the neighborhood of the ilio-cæcal valve. The whole course of the intestine was in a state of turgescence, and the appendix, which is normally from three to six inches long, and its diameter about that of a goose quill, was in this case seven inches in length and one-half inch in thickness, which was a remarkable thickening of the appendix.

The only cause that could be attributed to the intussusception in this case was that the boy was in the habit of standing on his head many times during the day, and it was noticed by his parents that he could maintain this position for a great while, although heretofore no evil effects presented themselves.

This condition of intussusception is more common in the young, 50 per cent. of all cases occurring in childhood, and males are more subject to it than females. Here arises the question, may it not be for the reason that boys indulge in acrobatic performances more than girls, just as this boy did?

In the Croonian lectures of 1857, intussusception is divided as follows in frequency: Ilio-cæcal, 50 per cent.; iliac, 28 per cent.; jejunal, 4 per cent., and colonic, 12 per cent., which shows that my case comes under the head of the larger percentage.

**Sanger, Frank Dyer: The Etiology of Infantile Convulsions.** (*Maryland Medical Journal.* 1897. Vol. xxxvi. No. 14.)

After an extended discussion of the various causes which may produce convulsions, and a review of the theories which have been advanced regarding them, the author reaches the following conclusions:

I. Convulsions are most frequent under two years. There are two periods of frequency, under one month and between six months and two years.

II. The nature of the nerve reaction resulting in a convulsion is not understood, but it is probable that instability of nervous tissues at this period of life favor this reaction.

III. Convulsions are frequently observed in adult life, and result from auto-intoxications and other causes.

IV. Convulsant substances may be introduced from without or generated within the economy.

(a) Substances useful to the economy, if they accumulate, become harmful—for instance, water, carbonic acid, mineral substances, the salts of biliary acids, soluble ferments, toxins not ferments in saliva, alkaloids of secretion in urine.

(b) Infectious agents may elaborate toxins.

(c) Organisms constantly present in the economy under certain circumstances may become infectious agents.

V. The instability of all the organs and tissues of the infant economy makes auto-intoxication common.

VI. Convulsions occurring in rhachitis and diseases associated with great nutritional disorders; all forms of gastro-intestinal disorders; the acute infectious fevers are most readily explained on the ground of auto-intoxication.

VII. Convulsions resulting from marked disturbances in the respiratory and circulatory system, as for instance asphyxia and hemorrhage, are in all probability toxic.

The reflex origin of convulsions is probably not common. It should, however, be noted that when the so-called convulsive habit is established, reflex disturbance may bring on a spasm.

**Millon: Pharyngeal Cough in Children.** (*Rev. Intern. de Méd. et de Chir.* Vol. vii., No. 23.)

Such a cough is very frequent and gives rise to errors in diagnosis. It is coarse in character, more frequent at night than in the daytime, and occurs in paroxysms of ten to fifteen minutes' duration. But three attacks occur during the night—when the child goes to sleep, at midnight, and when he awakes in the morning; the last is the most frequent. The cough may be accompanied by the expectoration of mucus, which in severe cases is streaked with blood.

The cough is very persistent, and is due to chronic pharyngitis, to which condition all treatment must be addressed. There are no abnormal physical signs in the chest. From its paroxysmal character the cough resembles pertussis at times.

**Wenner, Ralph J.: Lumbar Puncture of the Subarachnoid Space, with Report of Cases.** (*Cleveland Journal of Medicine.* 1896. No. 12.)

The author reports four cases of this operation, and concludes that therapeutically, the result of the puncture in the last two cases was negative; in the first case, however, it seemed that



the amount of benefit derived from the operation warranted its performance. In the first case it was possible to bar out tubercular meningitis and purulent meningitis. The large amount of sugar in the fluid made him feel certain that a growth of some kind would be found, in connection with any other condition that might be present. In two cases he felt sure of the presence of bloody fluid in the ventricles, and, owing to the dark bloody fluid in one case, an intraventricular clot was suspected. However, one puncture in a case of this kind is not sufficient to warrant a positive diagnosis of bloody fluid in the ventricles, for the possibility of wounding a vessel while making the puncture must always be taken into consideration.

**Baron: Catarrhal Icterus in Children.** (*Thèse de Paris, Rev. in Rev. Intern. de Méd. et de Chirurgie.* Vol. vii. No. 17.)

While the pathogenesis of catarrhal icterus has not been definitely elucidated, three theories have been offered in explanation: Virchow's, which assumes that the obstacle to the flow of bile is a plug of mucus in the ductus choledochus, due possibly to inflammation of the intra-duodenal portion of that canal; Chauffard's, which considers that the resorption of intestinal poisons has an irritant action upon the liver and its excretions, which cause catarrhal obstruction of the choledochus; Kelsch's, which looks upon the process as an infectious one, the specific germ entering by inhalation or ingestion.

Catarrhal icterus occurs sporadically, and often in epidemic form; but the contagium has never been demonstrated. In children it is often due to impure water or improper food, and the onset may or may not be accompanied by gastric symptoms. The icterus usually reaches its maximum in three or four days, then diminishes, the pigment being eliminated by the urine, saliva, sweat and sebaceous secretion. The liver is enlarged; there is no fever, as a rule, but the skin shows vaso-motor changes. The stools are colored greenish brown or grayish white, due to the absence of bile pigment and the superabundance of fat as well. Urine contains urobilin, which is the product of hepatic insufficiency, and a greatly diminished amount of urea.

The duration of the disease is usually from ten to thirty days, and the prognosis good as a rule; the kidneys require careful watching.

For treatment, cold baths, intestinal antisepsis, milk diet and vichy water are recommended.

Seven cases are cited, two of which had relapses due to an early return to solid food.



# American Pediatric Society.

NINTH ANNUAL MEETING.

Washington, May 4th, 5th, and 6th, 1897.

## OFFICERS.

<i>President,</i>	-	-	-	L. EMMETT HOLT, M.D.
<i>First Vice-President,</i>	-	-	-	HENRY KOPLIK, M.D.
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<i>Recorder and Editor,</i>	-	-	-	FLOYD M. CRANDALL, M.D.

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J. P. CROZER GRIFFITH,	WM. OSLER,
B. K. RACHFORD.	C. P. PUTNAM.

## COMMITTEE.

On the Collective Investigation of Scorbutus: W. D. BOOKER, J. P. C. GRIFFITH, C. G. JENNINGS, A. CAILLÉ, J. L. MORSE.

Cincinnati was selected as the place of holding the tenth annual meeting in the spring of 1898.

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## ABSTRACT OF TRANSACTIONS.

The ninth annual meeting under the vigorous presidency of Dr. Samuel S. Adams, of Washington, proved to be one of rather more than usual scientific interest. Several of the papers were notable contributions to medicine, while the average of all was notably high, and the number of single case reports was unusually small. The sessions were held in Prof. Huntington's room of the Columbian University. Owing to the fact that the meetings of the Congress occupied each afternoon, three fore-

noons only were available for the meetings of the Society. The large number of the contributions offered rendered the sessions somewhat crowded, and curtailed discussion. This was the only part of the meeting to be regretted, as more ample time would have certainly drawn out some very interesting discussion on the papers.

The meeting was opened by the reading of the President's annual address, entitled "The Evolution of Pediatric Literature in the United States." The full text of this admirable paper will be found in the present number, and will be read by every physician interested in children, with the keenest of pleasure.

The President's address was followed by the reading of a very scientific paper by Dr. James C. Wilson upon tic convulsif, with the report of a case. The case belonged to the class of nervous disorders which includes the "jumpers" described by Beard. The disease passes through three stages: (1) motor disturbances; (2) inarticulate crisis; (3) scholalia and coprolalia. To this the author added a fourth stage marked by an impulse to imitate the words and acts of bystanders. Dr. B. Scharlau presented a synopsis of fifty-six cases of empyema operated upon during 1896, with a death rate of thirty-three per cent. As several of these children died from acute infectious diseases, the actual mortality from the operation must apparently be placed at a much smaller figure.

Dr. William D. Booker reported a case of congenital diaphragmatic hernia, associated with recurrent attacks simulating asthma dyspepticum. The child died during one of these attacks, and the true nature of the disease was revealed by the autopsy. Dr. J. P. Crozer Griffith reported two cases of unilateral tremor. In at least one of these cases it was the belief of the author as well as of those who took part in the discussion, that the peculiar condition might be due in large measure to malnutrition. Dr. J. Henry Fruitnight read a paper upon a frequent significance of epistaxis in children. He believed that this symptom was not infrequently due to cardiac disease, so frequently in fact, that a careful physical examination should be made in every case of repeated nasal hemorrhage.

Dr. George N. Acker reported two cases of meningitis, apparently tuberculous, with recovery. The symptoms in these cases were so suggestive of tubercular meningitis as to raise the often repeated question regarding the possibility of recovery from that

disease. Dr. Joseph O'Dwyer reported a case of congenital stenosis of the larynx. Complete relief was obtained by gradual dilatation with steel sounds.

Dr. William Osler, in a most excellent paper on adherent pericardium in children, reported several cases of that condition and dwelt at some length upon the symptomatology. Dr. A. Jacobi reported a case of sarcoma of the skin in a newly-born infant, and read an extensive paper regarding the origin and development of such growths. Sarcoma involving the subcutaneous connective tissue is not uncommon, but such a growth developing primarily in the skin is extremely rare.

Dr. F. Gordon Morrill reported an analysis of one hundred cases of frank pneumonia. He called attention to the confusion produced by the use of the term *lobar pneumonia*. Because of the errors to which this confusion leads, he has adopted the term frank pneumonia in place of the term lobar or fibrinous. Dr. Floyd M. Crandall read a paper on hereditary tendency in pediatric practice, in which he spoke of the distinctions to be made between heredity and degeneration, and called attention to certain points in heredity which are sometimes misunderstood. The chief of these was the fact that elements of good heredity are equally important with bad heredity, but are frequently disregarded.

Dr. B. K. Rachford read a most practical paper on the symptomatology of lithæmia, in which he described various general classes of this condition, and considered special symptoms in detail. Dr. J. P. Crozer Griffith reported a case of retro-œsophageal abscess, and discussed the symptomatology and etiology of that condition, the conclusions being that the symptoms are frequently so obscure that diagnosis is quite impossible.

Dr. C. G. Kerley reported a case of exophthalmic goitre apparently cured by the use of thyroid extract. The case was an undoubted one and the beneficial effects of the treatment seemed to be equally clear. Dr. Henry Koplik reported the extensive use of thyroid extract for the purpose of testing its value in different diseases of the blood and bones, and his conclusions suggested its more general use in those diseases. Dr. Francis Huber also presented a paper reporting a cure of goitre by thyroid extract.

The report of the committee on the collective investigation

of the antitoxin treatment of laryngeal diphtheria in private practice was read by the chairman, Dr. Northrup. The conclusions were that the mortality of laryngeal diphtheria now rests at 21.12 per cent.; that about 60 per cent. have not required operation; that the mortality of operated cases is 27.24 per cent.

Dr. Joseph O'Dwyer read a most scientific contribution on the subject of retained intubation tubes. By this term is meant the necessity of continuing intubation long after the disappearance of the original disease. This paper will appear in full in the next issue of the ARCHIVES. Dr. Henry Koplik presented an apparatus for the rapid bacteriological diagnosis of diphtheria. A diagnosis, the author showed, could be positively made within three hours. Dr. T. M. Rotch reported a case of diphtheria of the eye, and made some important observations upon the use of antitoxin in this and other forms of diphtheria.

Dr. Edward P. Davis read a paper upon pre-natal infection in diseases of infancy. After a prolonged study of this subject the author believed that not only may the same poison which affected the mother be transmitted to the child in conditions of maternal toxæmia, but that there also exists in infants a toxæmia of apparently intestinal origin, which, in severe cases, may result in death. Dr. Irving M. Snow reported an undoubted case of acetanilide poisoning in an newly-born infant by absorption from the umbilical wound. Dr. R. G. Freeman presented an improved nursing bottle, and Dr. T. M. Rotch presented a specimen of ileo-colitis.

The following members read papers by title: Dr. J. Lewis Smith, Dr. W. F. Lockwood, Dr. W. P. Northrup, Dr. R. G. Freeman, Dr. H. D. Chapin, Dr. Francis Huber, Dr. C. G. Jennings, and Dr. C. P. Putnam.

Infantile scorbutus was selected as the subject for collective investigation, and a committee was appointed with instructions to report at the next annual meeting. Cincinnati was selected as the next place for meeting, but the date of meeting was not certainly fixed, but will no doubt be in May, 1898.



# ARCHIVES OF PEDIATRICS.

VOL. XIV.]

JULY, 1897.

[No. 7.]

## Original Communications.

### RETAINED INTUBATION TUBES—CAUSES AND TREATMENT.\*

BY J. O'DWYER, M.D.,  
New York.

By retained intubation tubes following intubation for croup, we mean the necessity of continuing intubation long after the disappearance of the original disease. The cause and seat of the obstruction to respiration in these cases can be best explained and understood by arranging them under three rules, to which there are only a few exceptions.

*First:* The cause of persistent stenosis following intubation in laryngeal diphtheria can be summed up in the single word, traumatism. Paralysis of the vocal cords may possibly furnish an occasional exception to this rule.

*Second:* The injury to the larynx is done by a tube that does not fit. It may result either from an imperfectly constructed tube, or from a perfect tube that is too large for the lumen of the larynx, although proper for the age, or from a tube that is perfect in fit and make, if not cleaned at proper intervals.

Exceptions to this rule are repeated lacerations of the larynx made by inexperienced operators during attempts at introduction or removal of the tube.

*Third:* The seat of the lesion that keeps up the stenosis is just below the vocal cords in the subglottic division of the larynx or that portion of the organ bounded by the cricoid cartilage. Exceptions to this rule result from injury produced by the head of the tube on either side of the base of the epiglottis, just above the ventricular bands.

Ignoring the question of badly constructed tubes, why does a perfect intubation tube, used at the age for which it is de-

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\* Read before the American Pediatric Society, Washington, May 6, 1897.

signed, wound the larynx, and why does the lesion occur below the vocal cords? To simplify the answers to these questions, I



1. Cross section through cricoid cartilage of normal larynx showing anatomical constriction one quarter inch below vocal cords. 2. Section from same specimen one inch lower down, showing great difference between lumen of trachea and subglottic division of larynx. 3. Section in same location showing subglottic stenosis in laryngeal diphtheria with tube suitable for age placed beside it.

will show you two larynges, each having a transverse section through the cricoid cartilage, one of which is normal, the other diphtheritic. First observe the difference between the lumen of the trachea and that of the larynx at the point of section in the normal specimen, and the necessity for a small intubation tube will be apparent. Then compare the size of the opening at the point of section in the diseased specimen with that of the tube placed beside it, and it will be equally apparent that the tube proper for the age is in some cases altogether too large. The anatomical constriction that exists in this cricoid region is enormously increased in the diphtheritic larynx by infiltration of the mucous membrane, which, being surrounded by cartilage, can swell only toward the centre, or at the expense of the breathing space. If a tube proper for the age is forced into the larynx in a case of this nature, ulceration or sloughing of the tissues is inevitable, with possible necrosis of the cricoid cartilage from interference with the circulation. One safeguard against the more frequent occurrence of destructive injury under these circumstances is the fact that in extreme cases of subglottic stenosis the tube

proper for the age cannot be introduced, and a smaller size has to be substituted. Extreme subglottic stenosis is not common, but some degree of infiltration occurs at this point in every case of croup, and the pressure from the tube varies accordingly. Whether it be sufficient to produce ulceration or not, if the circulation be seriously impeded, œdema of the surrounding tissues takes place, and it is this secondary œdema, especially in and around the chink of the glottis, that plays such an important part in perpetuating the obstruction to respiration.

In the early stage of these cases the dyspnœa often returns slowly; there may be an interval of several hours, or the greater part of a day, between the removal of the tube and the necessity for its reintroduction, but gradually this interval grows less and less, until finally it taxes the skill of an expert operator to get a tube back in time to prevent asphyxia. The slow return of the dyspnœa means that the stenosis is still principally confined to the subglottic region, the lining membrane of which cannot swell while the tube is in position, because it is compressed between the tube and the cartilage, and some time must elapse before this process can take place after its removal. The rapid return of the dyspnœa shows the presence of œdematous tissue, which drops into the chink of the glottis and obstructs respiration as soon as the tube is removed.

In the exceptional cases equally rapid asphyxia may result from granulation tissue originating higher up, from complete destruction of the cricoid cartilage, and from abductor paralysis. The most important exception to the rule that the seat of the obstruction is in, or originates in, the subglottic division of the larynx, is the development of granulation tissue, which grows from the antero-lateral aspects of the larynx just above the ventricular bands. The cause of this growth is a slight ulceration or erosion of the mucous membrane at the points corresponding to the greatest transverse diameter of the shoulder of the tube from the pressure exerted during the act of swallowing.

If the head of the tube be rough, either from imperfect construction or from coating with calcareous granules, ulceration results which cannot heal, hence the fungous granulations which fall into the chink of the glottis and obstruct respiration.

Complete destruction of the cricoid cartilage, which permits the soft tissues between the thyroid and the first ring of the trachea to collapse, as soon as the artificial support is removed,



results in equally rapid asphyxia. It is fortunately of rare occurrence, as I have seen but a single case. This was a child about three years old, that was intubated several years ago at the New York Foundling Hospital. It retained the tube suitable for the age, 3-4, for almost a week, when it began to expel it at frequent intervals. The 5-7 size was then inserted, but was promptly expelled. A special tube with very large retaining swell was now ordered, but before it could be obtained the 8-10 size had to be substituted, and was not retained any better. When the special tube was inserted it was firmly believed that it would remain as long as required, but it was expelled with as much ease as the others. Complete apnœa immediately followed each expulsion, and on several occasions the resident physician barely reached it in time to save its life, and finally he failed to do so. The autopsy showed complete destruction of the cricoid cartilage, a few necrotic shells only remaining in place. In the absence of any similar experience, the diagnosis naturally arrived at in this case was abductor paralysis, although it was very early for this manifestation, as the diphtheritic process had not entirely disappeared at the time the child began to expel its tube. I did not see this case in the beginning, but there is little doubt that it was a case of extreme subglottic stenosis, in which the tube suitable for the age produced sufficient pressure to cause sloughing of the mucous membrane and at least partial necrosis of the cricoid, the larger tubes subsequently used completing the process.

Paralysis of the vocal cords as a cause of retained intubation tubes I am free to confess I know very little about. In the absence of a laryngoscopic examination, which is seldom practicable in young children, there is no means of distinguishing impeded respiration due to abductor paralysis from that of œdematous or granulation tissue described above. The rapid return of the dyspnœa after the removal of the tube, would be the same in each. If a tube one size larger than that suitable for the age is frequently expelled, and the cricoid cartilage is found on palpation to be intact, adductor paralysis may be strongly suspected. But adductor paralysis does not cause obstruction to respiration, neither is it probable that paralysis of both sets of muscles would seriously impede the entrance of air, because the vocal cords are then left in the cadaveric position with a fair amount of breathing space between them.



Paralysis of the intrinsic muscles of the larynx is acknowledged to be a rare sequel of diphtheria, and this view is sustained by the fact that I have never observed it in any of the non-operated recoveries from laryngeal diphtheria, nor have I ever more than suspected its presence in any of my own operated cases. Some cases seen in consultation in which it was difficult to keep a tube in the larynx, might have been adductor paralysis or its equivalent, laceration of the vocal cords or their attachments by the unskilful use of the extractor. The absence of paralysis from the more frequently affected pharyngeal muscles would be a strong point against its existence in the larynx in suspected cases.

Again it should be remembered that paralysis is a late sequel of diphtheria, and that under ordinary circumstances there is ample time to get rid of the intubation tube before its development, or in other words, it would be necessary to assume the existence of some unusual form of obstruction to necessitate the wearing of a tube, in the interval between the disappearance of the primary disease and the onset of paralysis. Taking all these things into consideration, I should be slow to acknowledge that paralysis of the vocal cords played any important part as a cause of retained intubation tubes.

The method of treatment appropriate in the vast majority of these cases is plainly suggested by the cause and seat of the obstruction. Since the lesion producing the stenosis is the result of excessive pressure, the indication is to reduce the pressure by reducing the size of the tube, until it fits loosely enough to permit a return of the normal circulation, and the healing of ulcerated surfaces. One or two sizes smaller than that suitable for the age is necessary for this purpose, but the shoulder and sometimes the retaining swell must correspond to the age.

While in ordinary cases the tube is held in the larynx by contraction of the vocal cords, in marked subglottic infiltration the stricture takes the place of the cords, and unless the mucous membrane be extensively destroyed, a small retaining swell is not only sufficient, but very desirable.

If a large retaining swell be added to a small tube, which implies that it is also shorter, the thick portion must begin higher up, which brings it within the stricture, instead of resting wholly in the trachea. The result is almost as much pressure as would be produced by the larger tube. This defect can be

obviated either by having the tube made longer or by carrying the retaining swell closer to the distal extremity. Two tubes, specially constructed on the above principle, are necessary, particularly for cases of long standing, because fatal apnœa would often result before the tube removed could be cleaned and prepared for reinsertion.

The tube should be changed about every five days to avoid the irritation resulting from calcareous deposits, which occur in varying amount in different cases, and usually in the form of coarse granules.

If a tube removed at the end of five days is almost free from such deposits, the next time it may be allowed to remain a full week.

The time required to get rid of retained intubation tubes under appropriate treatment, will depend largely, as in retained tracheal canulæ, on the duration of the retention before such treatment was begun. The ideal treatment for these cases, and in fact for all cases requiring intubation, would be a tube constructed of some non-metallic substance not liable to calcareous deposits, which could be worn for a long time without change. Experiments that bid fair to be successful are now being made with hard rubber tubes, having a thin metallic lining to give sufficient strength, without objectionable thickness of wall. Such a tube of proper construction and size could be worn almost indefinitely without change and without injury to the larynx or discomfort to the patient.\*

Regarding the frequency and the outcome of this class of cases, the experience derived from my own 535 cases intubated for laryngeal diphtheria will be instructive. My 251st case was the first one in which the stenosis persisted beyond the probable duration of the causative disease. This was a boy three and a half years old, in whom the 3-4 tube was used, and which required some force to introduce. Sub-glottic infiltration was easily recognized as the cause of the resistance, but the danger of leaving a tube in the larynx for several days that required force to insert was not then appreciated, nor had any other provision been made for such cases up to that time. This boy went without his tube as much as eight hours on two or three occasions, and the dyspnœa never returned

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Mr. Ermold, of 312 East Twenty-second Street, New York, assures me that such tubes will be in the market within a few months.

immediately after extubation, showing that the lesion was subglottic ulceration without secondary œdema. The tube was finally dispensed with in twenty-nine days, and with a single exception this was the longest time in which a tube was worn in any of my own cases. This exception was the 383d case, an infant eighteen months old, in whom the tube was retained eleven weeks. The two year tube was used, and this being the same as the No. 1, with the exception of larger head and retaining swell, no smaller tube could be substituted. The tube was removed once a week and generally had to be replaced in from fifteen to thirty minutes. It was very thickly coated with calcareous matter on each occasion, and it is very probable that this was at least partially responsible for the persistent stenosis. After the final removal of the tube there remained considerable impediment to respiration, which passed off in the course of a few days. I have had one other case in which the tube was retained twenty-seven days, and two cases, twenty-four days each. Several cases of lesser duration occurred between this and the average time of retention, but these came within the limit of at least the occasional duration of diphtheria in the pre-antitoxin period.

All these cases recovered without any other treatment than that described above, and nothing more is required. The question of tracheotomy was never considered for a moment, because, with the exceptions to be given later, it is the worst possible thing that can be done, and for the following reasons:

*First:* The tracheal canula, if long worn, invariably produces a stricture of its own, just above the wound, which is more difficult to cure than the primary one.

*Second:* If extensive subglottic ulceration exists at the time the trachea is opened, the rapid healing which follows is very likely to produce a close, cicatricial stricture, if not complete occlusion of this narrow portion of the larynx. Slow healing around a properly fitting intubation tube is much less likely to be followed by contraction, and is the only safe method in these cases.

The following case, seen with Dr. A. M. Lesser, is instructive in this connection. It was a boy three and one-half years old, who was intubated for laryngeal diphtheria in the year 1888. Considerable resistance was encountered in introducing the tube proper for the age, 3-4 size. The tube was dispensed



with in the average time, five or six days, and nothing more was heard of the case for several months, when he was brought to my office suffering from severe dyspnœa. I remembered that some force had been necessary to insert the tube, and knew that I had a close subglottic cicatricial stricture to deal with. I tried to intubate with the smallest tube in the set, but failed; then tried to pass small sounds, and finally a long, bent probe, with the same result. Tracheotomy, with dilation of the stricture from below, followed by intubation, was recommended, but the parents refused the operation. For five years this boy enjoyed very fair health in spite of the continuous dyspnœa, until the small breathing room left was encroached upon by an attack of false croup. Dr. Lesser was called, and remembering our previous experience, and the treatment then recommended, performed tracheotomy, and divulsed the stricture through the wound. The canula was dispensed with after a few days, and there has been no return of the obstruction since the operation four years ago. It would have been much better for this little patient had the necessity for wearing the intubation tube continued for several weeks instead of a few days, especially if a smaller tube than that producing the ulceration had been substituted. The ulceration would then have healed slowly around the tube with very little contraction. I have so far not seen nor heard of any similar case, but it will be remarkable if less pronounced cases of this nature do not turn up from time to time in the future, probably many years after recovery from croup.

Respiration can be carried on perfectly through such an exceedingly small opening, that a moderate degree of contraction would not be noticed until the disparity between the development of the body and that of the air passage became very great, which would in all probability *not* occur before the early years of adolescence. If a case of laryngeal dyspnœa is encountered a dozen or more years after intubation, there need be little doubt about the cause, and still less about the seat of the obstruction. In view of all these facts, the practice adopted in some of the European hospitals of resorting to tracheotomy if the intubation tube cannot be dispensed with in a certain number of days, is to me incomprehensible. The reason assigned for this practice is the danger of decubitus, but the ulceration occurs during the first few days, while the tissues are still acutely inflamed and infil-



trated, and often heals when the swelling subsides, without even reducing the size of the tube.

Chief among the exceptional causes of retained intubation tubes, and the one most difficult to manage, is granulation tissue growing from ulcerated surfaces produced by the lateral projections of the shoulder of a tube that is either badly constructed, too large, or roughened by granular deposits. I have here a specimen of this condition which was shown at the last meeting of the Society. The roughened surfaces on either side of the epiglottis, whence the granulation originated, together with the general thickening of the epiglottis itself, can be best appreciated by comparison with the normal larynx which accompanies it. This tissue, when extensive, drops into the chink of the glottis, and obstructs respiration as soon as the tube is removed. My first experience with this complication of intubation occurred in the year 1888, in a boy eight years old, who was brought from a distance to get rid of a tracheal canula that had been worn for almost a year. As the result of a high tracheotomy, the larynx was completely occluded by adhesion of the vocal cords throughout, and of all the tissues between them and the canula. The adhesions were broken up from below by enlarging the external wound, and a tube of small size placed in the larynx. This was removed every week, and quickly replaced by a clean one, as the cords dropped into their old position of contact as soon as the tube was removed, producing complete apnœa. This went on for several weeks without any improvement, when it was considered useless, if not injurious, to the larynx, to remove the tube so often, when it had to be immediately replaced by another. I therefore concluded to leave the same tube in position for a month. Before the expiration of this time two intensely red masses, each about the size of a split pea, could be seen, by the aid of the mirror, springing from the antero-lateral aspects of the larynx between the epiglottis and the shoulder of the tube. The tube was immediately removed and replaced by a clean one, which was repeated every week as before, but the granulations continued to advance upwards and backwards until they coalesced in the middle line, and began to encroach on the lumen of the tube. It was necessary that something should be done soon to get rid of this new growth, or the trachea, which had closed, would have to be reopened. A laryngologist was called, but could do nothing, because the patient would not tolerate any

instrument in his throat except the mirror. I now had a tube constructed with what is known as a built up head, with an extra backward curve, on the principle of the one I here show you. The object of this device was to lift the tube so high in the larynx that the granulations could not follow, that the points of pressure would be changed, and obstruction to respiration avoided. The latter only was accomplished, as the growth still partially overtopped the head of the tube, but not the aperture, and did not appear to increase. After having been under treatment four months, the parents were obliged to return home, and the boy would not remain behind. I therefore had a hard rubber tube constructed on the same principle and placed in his larynx before leaving. They were instructed to return in three months or sooner if the breathing became obstructed. About the end of this time he had occasional attacks of dyspnœa, and the tube was removed with great difficulty. The report received stated that he died suddenly five days later of heart failure. It is more probable that death was due to apnœa, from the granulation masses having been drawn into the chink of the glottis during a forced inspiration, as in the act of coughing, or from approximation of the cords.

This important bit of experience as to the danger attending the long retention of a metallic intubation tube was, in all probability, acquired at the expense of that boy's life, because without this complication the cure of his stenosis was only a question of time.

Only two cases following intubation for croup have come under my own observation, in which granulations were recognized as the cause of the persistent obstruction to respiration. One was Dr. Dillon Brown's case, already published, in which a cure was accomplished in about ten months, a tube with built up head having at least assisted in bringing about this result. The other case was a boy four years old, seen several times with Dr. W. T. Alexander. The masses of granulation tissue overlapping the head of the tube could be easily felt, and an attempt was made to remove them by the aid of the mirror, under chloro-



I. Tube with built-up head.  
II. Tube with ordinary head.

form, without success. The tube with built up head, already shown, was used in this case, and he enjoyed perfect health while it was in, but the moment it was removed he became asphyxiated.

After having worn the tube fifteen months, this patient was removed to a hospital, where tracheotomy was performed, followed by death from broncho-pneumonia in three days.

The difficulty of getting rid of these fungous granulations, which are only the result of an abortive attempt at healing, arises from the fact that an intubation tube cannot be constructed that will entirely remove pressure from the wounded surfaces. If sufficient of these growths could be removed to enable the patient to dispense with the tube for even one day, it would probably effect a cure, so rapidly do they collapse when the cause is removed. If the opportunity again offers, I will make this attempt aided only by the sense of touch, as the mirror is useless for this purpose in young children. With our present experience in this class of cases, when the use of the special tube, after a fair trial, fails, the only alternative is tracheotomy, followed by the removal of the canula as soon as air enough to sustain life can be obtained through the natural passage. It is much better to take some chances in removing the canula very soon, than to incur the greater risk of its permanent wearing or of another resort to intubation to get rid of it.

For complete destruction of the cricoid cartilage, tracheotomy is the only remedy, and under these circumstances there is no hope of ever getting rid of the canula.

In adductor paralysis, in which the retaining power of the vocal cords is lost, this power must be transferred to the anatomical constriction in the cricoid region by increasing the size of the retaining swell until the tube is retained.

For persistent stenosis, due to repeated lacerations of the mucous membrane by the unskilful use of instruments, especially the extractor, the indications are plain. I have succeeded in several cases in getting rid of tubes that had been retained for months under these circumstances, by the careful removal and reinsertion two or three times, at intervals of five days.

I attribute my own comparative freedom from these annoying complications of intubation principally to three causes: *First*, the use of perfect instruments. *Second*, the fact that I have always considered the size rather than the age of the patient in



selecting the proper tube to be used. *Third*, that in addition to the ordinary croup set, including the large calibre tubes intended to facilitate the expulsion of false membrane, I have for several years carried two complete sets of tubes, one having large heads, the other large retaining swells. By this means I have always been prepared for the odd cases without running the risk of using a tube of larger size. Some children, for example, have the knack of easily expelling the tube suitable for the age, and instead of substituting a large one, I use the same size with larger retaining swell. In cases of extreme subglottic stenosis it may not be possible to introduce the proper size, or having been introduced, it causes pain, which soon means ulceration; the next smaller tube with increased head usually fulfils all the indications. Or again, the swollen tissues may override the head of the tube and obstruct respiration, which the larger-headed tube overcomes. Some one would no doubt like to ask why the heads and retaining swells of all the tubes are not made larger, and thus dispense with the necessity for so many instruments. Without entering into a discussion of this question, I will simply say that there are good and ample reasons for not doing so.

In the majority of the cases of retained intubation tubes that I have seen in consultation, and they number at least twenty-five or thirty, the 3-4 size had been used. I had long been convinced that this tube was too large, or had become so by a process of growth—a vital quality which these instruments unfortunately possess, and which I fear will not be arrested by age—for many cases during the third year of life. I repeatedly requested that this tube be made as small as possible between the head and the beginning of the retaining swell, where it is most important that an intubation tube should be small, but this was not sufficient. I was therefore compelled to add another tube to the set, suitable for the third year of life. The two-year size had already been reduced several years before for the same reason, leaving quite a gap between it and the next larger size, which the new tube fills exactly. The old 3-4 tube is now used only during the fourth and fifth years, and 5-7 of the old scale is now the 6-7.

Those using Ermold's make of intubation instruments can have any of the special tubes described above made at short notice, by giving the number of the tube that is wanted with the



size of head and retaining swell. For instance, you have a case in which the 6-7 tube is retained; do not take any chances with one size smaller, which may still be too large, but order the three-year size with 6-7 head and retaining swell, the latter to be carried as near the distal extremity as possible. Since there is no false membrane to contend with under these circumstances, the great reduction in the calibre of the tube is a matter of no consequence, as there is still ample breathing room left, and if there is none to spare there will be no place for secretions to accumulate.

The following case, which was under treatment when this paper was prepared, is reported here in order to call attention to a very simple and successful addition to the treatment of retained intubation tubes, detailed above. It appears to supply the missing link that was necessary to hasten the cure in this tedious and troublesome class of cases. This case is unique in my experience, in being twice the subject of retained intubation tubes.

When the patient, a boy, now aged six, was three years old, he was intubated for laryngeal diphtheria, and wore the tube for nearly two months; on that occasion I saw him several times in consultation. On April 11th last, Dr. B. S. Talmey sent for me to intubate him again on account of urgent dyspnoea complicating measles. The eruption was just fading, and the obstruction to respiration had existed only twenty-four hours; there was no exudate visible and repeated cultures failed to show the presence of any Loeffler bacilli; neither was there any croupy cough or other sign or symptom except aphonia, pointing to the larynx as the seat of the obstruction to respiration. The breathing, while labored, was absolutely noiseless. It could be seen but not heard, and this is characteristic of marked stenosis when confined to the subglottic region. It is due to the fact that the current of air, which passes through little more than a pin-hole in the centre of the canal, either does not strike the vocal cords at all, or with insufficient force to produce a vibration, except when they are approximated as in phonating. The voice in these cases is usually retained. As the boy was large for his age, the 5-7 size was selected, but considerable force was required to insert it. He frequently complained of pain in the larynx, and fearing that extensive ulceration would result, the tube was removed on the second day and replaced by the next smaller size. This also required some force to introduce, and it was therefore removed in

two days, but had to be replaced in one hour and a half. The next time it was removed in four days and left out twenty hours. The intervals between the removal and reinsertion now began to diminish, as is usual when the secondary œdema described above begins to take the place of the primary stenosis. After the fourth removal the tube had to be replaced in fifteen hours; fifth removal, eleven hours; and sixth removal, five minutes. The sudden drop from eleven hours to five minutes marked the full development of secondary œdema which took place in spite of the fact that the three year tube with large head had been used for some time. Even this small tube could not be introduced without encountering appreciable resistance, which left no doubt that some cicatricial contraction was left from the first intubation when the patient was three years old. The tube was now regularly removed every five days, with immediate return of the dyspnœa, which was more marked on expiration. It was easily determined by the sense of touch that no obstruction existed above the vocal cords, while it was equally certain that the sole cause of the trouble was the presence of a mass of œdematous tissue, possibly mixed with granulations, just below the chink. As previously stated, such tissue cannot develop or exist between the tube and the cricoid cartilage, but this ring is very narrow in front, which leaves quite a yielding space where the pressure of the tube cannot affect it. How was this secondary obstruction, situated in such an inaccessible region, to be dealt with? The patient had been under treatment, with the smallest tube that could be used, for over two months without improvement or prospect of any.

The application of a powerful astringent or mild caustic, which could be carried to the right spot by the tube, offered the best prospects of success. A hot solution of gelatine was therefore applied to the tube between the head and the retaining swell, and over this, dessicated alum was thickly powdered and pressed in by the finger. After drying for several hours this tube was inserted, and when removed in five days he went without it for half an hour. Another tube treated in the same manner was then introduced, and the interval between removal and reinsertion was increased to three-quarters of an hour. The third time the tube was supplied with a double coating of gelatine and alum, the second having been applied after the first had dried. This caused considerable pain from the swelling of the gelatine

as it absorbed moisture. Several hours later I was sent for on account of a return of urgent dyspnœa, the cause of which was not suspected until the tube was removed, when it was found that some of the partially dissolved gelatine had been pressed upwards and entered the mouth of the tube. Another tube was inserted until the irritation produced by the application had subsided, and no further intubation was necessary. Three applications of the alum had accomplished a cure. Considerable dyspnœa, at times quite severe, persisted for several days, but gradually subsided without treatment. The voice returned almost immediately, notwithstanding the nearly continuous wearing of the tube for seventy-nine days. It is quite probable that an interval of only two or three days between the applications instead of five, as practiced in this case, would be still more efficacious, but this must be determined by experiment. This method may be resorted to in any case in which the tube is retained much beyond the average time, and I believe it is perfectly safe if only one layer of gelatine is applied.

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#### DISCUSSION.

DR. W. P. NORTHRUP.—In my private work I have never seen a tube retained, probably for the reason that I stick very close to Dr. O'Dwyer's instructions and keep to his tubes. You can prescribe for these tubes practically the same as you would for modified milk, giving the size of tube, the size of head, and the retaining swell. I have been in touch with several cases at the Willard Parker Hospital. Almost everybody, if they cannot keep an intubation tube in or out, want to have the case tracheotomized. The human mind seems to tend in this direction with great force. It is impossible to overcome it, and a certain number of cases are bound to receive that treatment. There are three children at the Willard Parker Hospital that are being redeemed, although they are indebted to Dr. O'Dwyer for the chance of life they have. One of them, just before I came away, was very much improved; the tube was left out at first twelve hours, then forty-eight hours, and now for longer intervals. I am fully convinced that they are having the only chance for life in the modified tube. The second I am not so sure about, and the third is still rather obstinate. I am sure that these tubes offer the only chance of the children coming out with a comfortable life.



DR. C. J. JENNINGS.—I have had one interesting and rather unique experience, not with a primarily retained intubation tube, but an intubation tube retained in an endeavor to displace a tracheal tube. The child was tracheotomized in the country six weeks before coming to the hospital, and came to have the canula removed by intubation. I intubated him and the tracheal wound healed. At the end of seven days the intubation tube was removed and the child was perfectly comfortable for twenty-four hours. Then I went to see him in the morning. When I entered the room the boy began to cry, and apnœa supervened. Unfortunately the house physician had taken all the instruments from the room and all I had was the scissors at the nurse's belt. With this I succeeded in cutting into the trachea again a little above the old opening and so resuscitated the child. The tube was quickly introduced again and allowed to remain about a week. It then was removed and remained out ten days, the child breathing with perfect comfort. Then there occurred emotional disturbance terminating very quickly in apnœa, which demanded, in my absence, a very quick tracheotomy by the house physician, with no opportunity for intubation. Perhaps three weeks after that we had the same experience. Then the tube was left in for three weeks, with intervals, and the same result occurred. This is quite different from an ordinary intubation. The case has been going on for about six months. The little fellow after a time learned that he had a tube in and one morning he took it out—he coughed it up. Each morning he would cough out his tube and in the evening it would be returned by the house physician. He continued that for about three weeks; then the tube was permitted to remain out for two days, then three days, and when I left a few days ago, he was going four and five days without his tube. He would take it out in the morning and it would be inserted on the appearance of even slight dyspnœa at the end of three to five days.

I cannot explain the condition upon the idea of rapid œdematous swelling, nor upon the line of a granulation mass suddenly obstructing the glottis. The condition of affairs, it seems to me, at least when the apnœa begins, is one of exaggerated physiological condition, that we find in the emotional disturbances. To my mind it must be a condition of abductor inadequacy, not paralysis. The condition is most exaggerated during sleep when his will power is insufficient to thoroughly retain the glottis in the open position. In the beginning, in all probability, the very urgent dyspnœa was aided in its production by the collapse of the injured anterior wall of the trachea. The combination of circumstances—the exaggeration of the physiological emotional dyspnœa from inadequate action of the abductors and collapse of the anterior wall of the trachea—it would seem to me would be the explanation rather than the action of œdema or granulation tissue.



DR. NORTHRUP.—Has Dr. Jennings seen any case in which the tube could not be retained, that got well on laryngotomy?

DR. JENNINGS.—I have not.

DR. O'DWYER.—How long had the tracheal canula been retained?

DR. JENNINGS.—Only six weeks.

DR. O'DWYER.—Six weeks is a short time in which to develop the secondary stricture referred to above, but some new tissue will have been produced even in less than six weeks, which is crowded inwards as the wound cicatrizes, acting as one source of obstruction to respiration. Another cause of obstruction results from the enforced rest to which the respiratory function of the larynx has been subjected. There is only one safe way to treat these cases, and that is to keep the external wound open until sufficient air to sustain life can be obtained through the natural passage in case the intubation-tube is expelled. The sooner it is then allowed to close the better, because contraction will continue for some time after complete healing has taken place. As soon as the patient can breathe comfortably without the tube, intermittent intubation should be practiced, with gradually increasing intervals until all tendency to contraction has been overcome. The intervals must be such as to prevent any recurrence of dyspnœa.

I have seen over a score of retained tracheal canulæ in children and adults, and not in a single case had the operation been a tracheotomy pure and simple. In every one the larynx had been implicated in whole or in part. The crico-thyroid space, because superficial, is the favorite point of attack, which brings the wound wholly within the larynx, and this alone is a sufficient cause for the retention. If the artificial opening could always be made well within the trachea, and that delusion about giving the larynx a complete rest could also be dispelled, there would be very few retained tracheal canulæ in curable forms of laryngeal obstruction. The respiratory function of the larynx was never intended to rest, and it cannot rest, for any considerable time, without disastrous results. The vocal functions of the larynx and those concerned in deglutition can often be suspended with advantage, but never its respiratory function. It would be almost as rational to talk about suspending the function of the lungs in order to give them a rest.

# A CASE OF CONGENITAL STENOSIS OF THE PYLORUS.

BY HENRY ASHBY, M.D., F.R.C.P.

Manchester, England.

Numerous cases have been recorded in which persistent vomiting has commenced shortly after birth, continued for weeks or months, and, finally, death has taken place from malnutrition. In such cases at the autopsy some form of obstruction has been found at the pylorus, duodenum, or at some spot lower down. Curiously, these congenital obstructions to the alimentary canal appear to run in families. Henschel\* has recorded the cases of three in a family who died shortly after birth from obstruction; in two of these a *post-mortem* was made, and showed a stenosis at the pylorus, in the other, which was believed to be of this kind, no autopsy was made. I† have also recorded a case in which four infants in succession, born of the same mother, died shortly after birth from obstruction; in a fifth, which died on the fourth day, a section showed that the duodenum ended in a complete cul-de-sac.

Of these congenital obstructions, a complete class of its own is formed by stenosis of the pylorus, and as illustration of this class of case, the following account of one coming under my own observation may be interesting:

In October, 1896, Dr. Corns, of Oldham, asked me to see an infant with him who was, he believed, suffering from a stenosis of the pylorus. The infant was born plump and healthy; it was fed at the breast, and all went well for about a week. At this time vomiting began, large quantities of food which had apparently accumulated in the stomach were pumped up, the vomiting continuing till the stomach was empty. The same thing was continually repeated; the stomach retained the breast milk for a time, and then vomiting commenced again, and more vomit, as the mother said, seemed to come up than could be accounted for by the food which had been taken. The doctor, thinking that the breast milk was at fault, substituted other

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\* Archiv. f. Kinderheilk., Band, xiii., Heft. 1.

† Diseases of Children, Ashby and Wright, p. 140.

foods, but with the same result. The stomach might retain small amounts, but sooner or later it would return, being ejected with much force. The vomit was always sour smelling after milk had been taken, but no bile ever came up. The stools were very small and constipated. The infant quickly began to waste after the persistent vomiting set in, and in a few weeks was greatly reduced. A few days before death convulsions occurred, followed by drowsiness, and later the respiration was

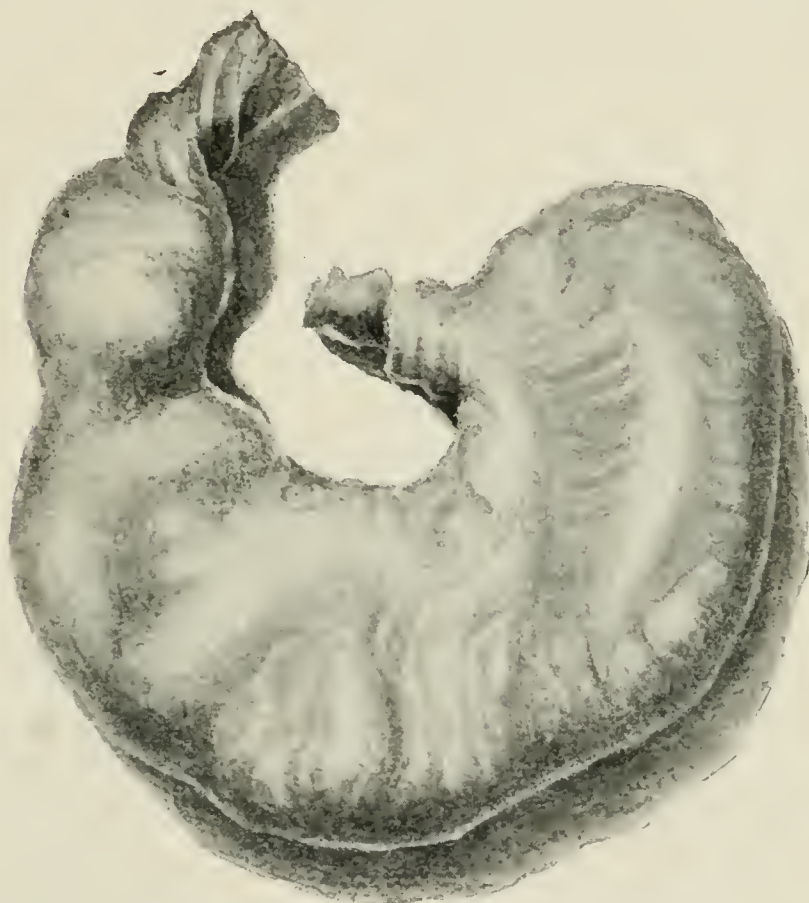


FIG. 1. Congenital stenosis of pylorus. The muscular walls of the stomach are much hypertrophied and sacculated in places. (Life size.)

typically Cheyne-Stokes in character. The fontanelle was sunken and the temperature subnormal. Death occurred at seven weeks. No tumor could be felt at any time.

The doctor made the *post-mortem*; he reported that the body was much wasted but otherwise healthy, the brain was congested. He kindly forwarded the stomach to me for examination and report.

An inspection of the stomach showed the muscular walls to be much hypertrophied; there was some irregular contraction of



the muscular fibres, giving the stomach more or less of a sacculated appearance, at the pylorus there was a hard, rounded mass, 2 cm. in diameter, feeling very much like a scirrhus tumor (see Fig. 1). The contents of the stomach could, with difficulty, be squeezed through the pylorus. An internal examination showed the mucous membrane to be red and swollen, with an excess of mucus, a condition no doubt due to a catarrh. The pyloric opening was 25 mill. in diameter, and continued at about this calibre for 2 cm. A section through the pyloric walls showed the thickened walls to be made up in part of swollen mucous membrane, but the greater part of the swelling consisted of hypertrophied muscular tissue (see Fig 2). Under a low power the epithelial layer is seen to be in a condition of hyperplasia and proliferation, the submucosa is also swollen and the circular layers of muscular tissue much hypertrophied (Fig. 3). A section of the muscular wall of the pylorus is seen in Fig. 4; the tissue is made up of muscular and much fibroid tissue.

The second case was as follows:

An infant, three days old, was admitted to the hospital under the care of my colleague, Mr. J. Collier, with an imperforate anus. An operation was successfully performed, the upper part of the bowel being found and connected with the anus. The infant, however, continued to vomit, and died when five days old. At the autopsy a high degree of stenosis of the pylorus was found, with some hypertrophied muscle around it. H. Finkelstein\* and Grau have recently reported several cases occurring in Prof. Heubner's clinic, in Berlin, and have reviewed the whole subject of pyloric stenosis in infants. In the cases they report, death took place in from thirty days to two and a half years; in some other cases believed to be of this nature, relief was afforded by treatment, and a recovery (at least temporary), took place.

The case most like the one just recorded, is one reported by Prof. Hirschsprung,† of Copenhagen. In this case the infant was nursed by its mother, and nothing abnormal was noted for the first ten days; then severe vomiting set in, which continued persistently till its death, when thirty days old. The vomit never contained bile. There was no marked distension of the abdomen, and no tumor could be felt through the abdominal walls.

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\* Jahrbuch f. Kinderheilk., Band, xliii., Heft. 1.

† Jahrbuch f. Kinderheilk., Band, xxviii., p. 63.

At the section a stenosis of the pylorus was found, the channel only admitted a "middle sized sound;" there was a cylindrical thickening of the walls of the pylorus most marked in the muscular layer. The walls of the stomach were thickened.

In the majority of cases reported the symptoms were not so acute, and the fatal issue delayed for months or several years. Thus, in a second case of Hirschsprung's,\* the infant suffered from constant vomiting almost from birth, finally diarrhœa set in and death took place at six months of age. In this case also there was stenosis of the pylorus, and thickened muscular walls.

One of Finkelstein's† cases is of interest, inasmuch as a tumor was felt during life. This case was a girl of three months old who was brought to Prof. Heubner's polyclinic. It had been fed on diluted cow's milk from birth, and had constantly vomited and suffered from constipation. On palpating the abdomen a tumor was felt, 2 cm. above the umbilicus and somewhat to the right; it was movable, cylindrical in shape, and about the thickness of one's little finger. The stomach was dilated, as ascertained by percussion, and also by passing the stomach sound.

At the section a pylorus stenosis was found, with much thickened walls.

Of much interest also are the cases of Huebner's, seen by him at the ages of nine weeks (two cases), and one of four weeks of age, which were apparently suffering from pyloric stenosis. These much improved under dieting and treatment, but the ultimate result must surely not be satisfactory if the diagnosis was correct.

The following two cases reported by J. Thomson‡ are more or less like the ones just mentioned.

Vomiting commenced a week after birth, persisted till death on the twenty-eighth day.

*Section.*—Stomach distended, four and two-third inches by two and three-quarter



FIG. 2. Section of the pylorus, showing narrow channel, hypertrophy of muscular fibres and hyperplasia of the mucous membrane. (Life size.)

\* Loc. cit.

† Loc. cit.

‡ Two cases of congenital hypertrophy of the pylorus and stomach. John Thomson, M.D., Edin. Hosp. Reports, 1896.

inches. The pylorus was very much thickened, and felt like a solid cylinder; it measured nine-sixteenths of an inch in diameter. When the stomach was distended nothing passed through the pylorus. On cutting through the pylorus with a probe pointed pair of scissors, the wall was noted to be one-sixth of an inch thick. The muscular layer was three times its normal thickness; there was little connective tissue.

In the second case, vomiting began at the end of four weeks; death took place in nine and a half weeks. The stomach was elongated, the pylorus thickened, measuring five-eighths of an inch in diameter. No fluid could be made to pass through the pylorus; the muscular wall of the latter was three-sixteenths of an inch thick. The mucous membrane lining the stomach was in a condition of catarrh and the muscular fibre hypertrophied.

In the following case recorded by Newton Pitt,\* there was hypertrophy of the muscular walls of the pylorus and stomach, but no stenosis.

Vomiting commenced at three weeks old; this was relieved by treatment, but the symptoms returned; convulsions supervened, and death occurred at the age of six weeks. The pyloric portion formed a fusiform tumor five-twelfths of an inch thick, consisting of hypertrophied muscle; the wall of the stomach was hypertrophied and dense. There was no stenosis. The duodenum was empty and normal.

Williamson† recorded the following case thirty-six years ago, and although he called it "scirrhus" it seems very probable it was of the same nature as the above cases. Healthy born, vomiting commenced a few days after birth, which persisted till death at five weeks. The pyloric extremity of the stomach was hard and indurated; the pyloric orifice hardly admitted a small silver probe. On slitting up the pylorus, the mucous membrane was seen to be thickened, the submucous tissue indurated and hypertrophied; the muscular coat was converted into fibrous tissue. The word scirrhus was applied to it, on account of its resemblance to scirrhus pylorus seen in adults.

In contrast with the above cases it may be interesting to note Cullingworth's singular case of a congenital epithelial growth,

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\* Hypertrophy of stomach in infant seven weeks old, Newton Pitt M.D., *Pathological Transactions*, 1892.

† The London and Edinburgh Monthly Journal of Medical Society, J Williamson, M.D., 1841, p. 23.



blocking the pylorus. In this case vomiting commenced on the tenth day, the vomiting persisted, convulsions supervened, death took place at the end of five weeks.

At the section it was noted that the stomach was enormously dilated, the walls hypertrophied, the pyloric half of the stomach walls especially so. There was a small tumor one-third of an inch in diameter, growing from the mucous membrane of the gastric end of the pylorus, and completely closing the pyloric orifice. It proved to be a cylinder-celled epithelioma.

The symptoms present during life in these cases are fairly distinctive, and in a typical case there would, as a rule, be no great difficulty in diagnosis. At first, probably, the diagnosis might be in doubt as to whether there was a simple gastric catarrh, or a catarrh which is secondary to some form of obstruction. The diagnosis would be easier as time went on. The most important symptoms may be put very shortly. For a week or more there may be no symptoms of any kind. Then vomiting begins. The vomiting occurs daily, probably several times a day, perhaps some meals are retained, and then a large amount of fluid, including the milk taken at several meals, is rejected with force. The vomiting is not a mere regurgitation, but the stomach contents are pumped up and forcibly ejected. The

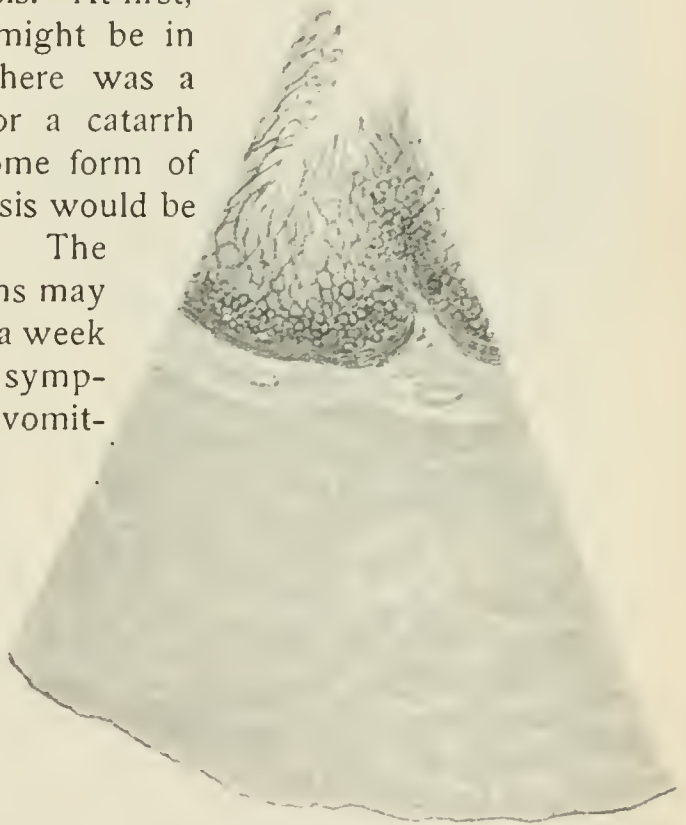


FIG. 3. Section of wall of pylorus (12 diam.), showing hyperplasia of epithelium, increase of connective tissue in the submucosa and marked hypertrophy of the circular muscular fibres.

vomited matters are sour, but never biliary. The infant only rests, in anything like comfort, when the stomach is empty. There is no great distension of the abdomen, as the intestines are mostly collapsed. Possibly a small elongated, movable tumor may be felt just above and to the right of the umbilicus. Constipation, with small stools, is almost certainly present, when

dilation and hypertrophy of the muscular walls are present. The peristaltic action of the stomach may be seen and also felt if the hand is placed on the abdomen. The dilated stomach may be demonstrated by percussion. The wasting will be progressive, and, as time goes on, very marked. The symptoms may be relieved by treatment for a while, but they are almost certain to

return. In the last stage there is often convulsions, drowsiness, and perhaps Cheyne-Stokes respiration.

When we come to consider the pathology of these curious cases, we are met with some difficulties. Finkelstein appears to me to make light of the difficulties in a summary fashion. He assumes, in the first instance, a congenital pyloric stenosis. In other words, for some unexplained reason, the infant

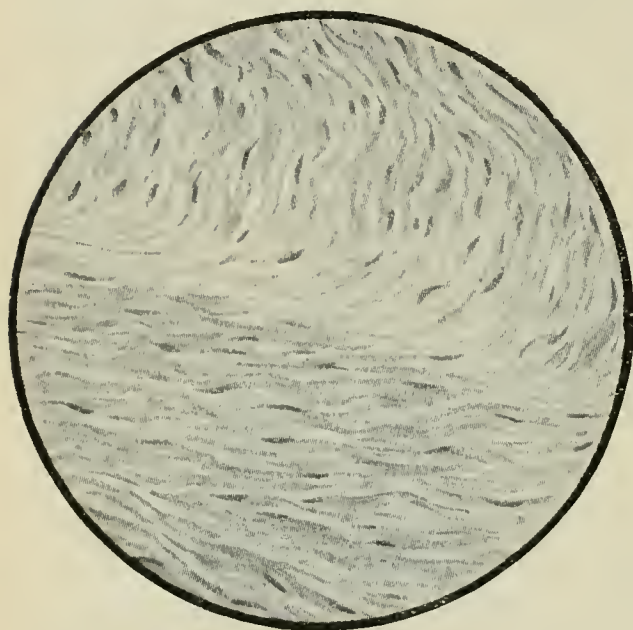


FIG. 4. Section of muscular coat of pylorus (250 diam.), showing the coat to consist of muscular and fibroid tissue.

is born with a rigid and narrow channel at the outlet of the stomach. This leads to stagnation and accumulation of the contents of the stomach; there follows, as a matter of course, a dilation and a complementary hypertrophy of the stomach walls. All this is easy-going enough, but it hardly fits within all the facts. In the first place, in some cases, notably in Pitts', there was *no obstruction* at the pylorus found at *post-mortem*, and yet there was marked hypertrophy of the muscular walls of the stomach and pylorus. It hardly seems likely that a pyloric stenosis would produce the very marked hypertrophic walls seen at the pylorus, neither do I think it will account for the induration of the walls of the stomach noted in some cases, the result of a mixture of muscular fibre and connective tissue present. The fact that in one of my cases, which died at the age of five days, there was considerable muscular hypertrophy at the pylorus, would make it tolerably certain that all, at least, of the muscular hypertrophy was not produced

after birth; that some at least was there at the time of birth. In some cases, at any rate, it seems likely that any stenosis present at the pylorus, was produced by the tonic contraction of the hypertrophied muscles at the pylorus, and which, perhaps, becomes in time indurated, and thus narrows the channel. J. Thomson suggests that during the latter months of intra-uterine life, the foetus swallows a considerable amount of *liquor amnii*, and that peristaltic action may be set up, leading to excessive action of the pyloric muscular fibres causing stenosis and a consequent hypertrophy of the stomach walls. He thinks the fault may be with the nervous mechanism which regulates the contraction and relaxation of the pylorus under appropriate stimuli.

Personally I must confess that I have no hypothesis of my own to offer, and, for the present at least, think that a careful and painstaking record of facts concerning these interesting cases is what is most required, and many more cases investigated before any satisfactory explanation can be given of their pathology.

Treatment will be palliative only. The fact that a gastric catarrh aggravates the stenosis, and interferes with the secretion of the digestive fluids, makes it clear that some temporary good, at least, can be achieved by treatment. In conclusion I must acknowledge the kindness of D. W. E. Fothergill for making the sketches for me.

THE LINDENS, VICTORIA PARK.



## THE USE OF THYROIDS IN DISEASES OTHER THAN CRETINISM.\*

BY HENRY KOPLIK, M.D.,

New York.

It is rather the object of this paper to place on record the use of thyroids in some rare conditions of childhood. Not so much because the results have been brilliant, but because some of the cases in which the agent has been used are among the rarest forms of disease in childhood, and their treatment has extended over a very long period of time.

In cretinism we are certain that the prolonged use of thyroids is followed by distinct changes in the blood, the anæmia improves rapidly, and when the correct dosage is attained this improvement is progressive and permanent. In some work on the blood, included in a paper on cretinism by the author (*New York Medical Journal*, 1897), it was found that in one case from an initial hemoglobin percentage of 18, (Fleischl) it mounted to 45 in two months, and at the end of a year the hemoglobin was 75 per cent., the proportion of white to red blood cells having been at first 1 to 290. In another case the hemoglobin increased from 25 to 40 in a month and in a year to 80, and a year and a half to 85 per cent. Thus the effects as witnessed in the changed conditions of the blood in cretinism are not at all uncertain. In the bones, in this disease, the growth of stature after taking thyroids is one of the striking results. Horsely was one of the first to insist that in the experimental removal of the thyroid, a mucin-like body was formed in the blood, which was not present if the thyroid was undisturbed. The progressive anæmia was connected by this author with some influence on the blood of the absence of the functioning thyroid. The result on the nervous system of the absence of the influence of the thyroid gland is too well-known to call for comment or repetition here. The influence on the skin and the subcutaneous structures and their nutrition is so striking and has been the subject of so much comment, that we only refer to it here as an intro-

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\* Read before the American Pediatric Society, Washington, May 5, 1897.

duction to the use of the thyroid in the cases about to be detailed. The writer wishes to report the use of thyroids in the following forms of disease of childhood:

- (a) Lipomatosis Universalis.
- (b) Hydræmic Anæmia, with or without a slight enlargement of the thyroid.
- (c) Marked Simple Anæmias, with or without enlarged spleen.

#### LIPOMATOSIS UNIVERSALIS.

Male.—Aet. ten years and ten months, February 18, 1895.

*Family History.*—Grandparents on both sides lived to be very old and died of old age. Uncles and aunts are all well. Parents in good health. Three other children in the family are well. No member of the immediate family is stout, on the contrary they are rather under weight. No neurotic family history could be obtained. Mother lost four children, aged nine months, one and one-half years, and seven months; all died of summer complaint; a fourth died, aged one day, of convulsions.

*Personal History.*—Birth normal. Was a healthy, breast-fed baby, not particularly plump, sat up alone when four months old, had his first tooth at eight months, walked at one year, talked when two years old. The mother said that in one respect he was different from her other children; he always slept a great deal. When five years old, had scarlatina, followed shortly by measles.

When six years old the woman who had him in charge let him fall on a stone stoop; he fell on the side of his head.

*Present Illness.*—Four years ago began to grow fat; at first the mother was pleased, but after a time the fact that the abdo-



LIPOMATOSIS UNIVERSALIS, AGED TEN YEARS

men was growing so large, struck her as unhealthy. Not long after, she observed that when he took hold of an object his hand shook; in raising his fork to his mouth it was very noticeable. The mother thinks it was just about this time that he held things more closely to his eyes than had been his wont some time before, and occasionally she would see him feeling the outline of objects, as if to aid his sight. He went to school two years, and was as bright as the other children of his age. The boy went to school in this country three months, when his teacher came to see the mother, and told her that it would be impossible to keep him at school, as he could not see his book, the blackboard, or even the teacher. His sight has grown poorer, his tremors increased, his voice gradually changed, he has steadily grown heavier. In August, 1894, she took him to the Mount Sinai Hospital, where he remained one month in Dr. Scharlau's service. He was then referred for a continuance of treatment to the writer. Latter part of August, 1894, after he had left the hospital, was seen at his home, was getting two thyroid tablets three times a day, his weight was 86 pounds; he was not seen from that time until February, 1895. The mother says he has grown steadily worse; he seems stouter from week to week, he is sleepier all the time, his speech less and less articulate, his tremor more and more marked.

*Present Status.*—Mental condition, patient seems about as intelligent as a child of six. The mother says he seems to her, so far as intelligence is concerned, just where he was four years ago. He has an excellent and accurate memory, as was attested in several instances; he remembered in March, 1895, the exact dose of medicine which he had been getting last August. He is afraid of strangers, and whines like a baby when he hears a strange voice, but when assured of kindness, he is friendly and affectionate. He told his mother he was afraid, because he could not see what strangers were about to do. He cries a great deal about his blindness, as he wishes to read and write, and be clever. His mother sends him on errands and he brings home everything she tells him to get. He counts correctly, always returning the correct change; he tells the value of a coin by touch. He is extremely fond of sleeping, sleeps soundly all night and does not waken in the morning unless aroused; he does not waken if called. He falls asleep almost any time of the day when sitting upright in a chair. If left alone in a room, he is almost sure to be



found asleep; his mother has let him sleep, to see what would happen and he slept until twelve o'clock noon; she would not let him sleep any longer. He is very pious, and prays frequently that he may get well.

Inspection shows a boy fat to deformity; the enlargement of the mammae and enormous abdomen are the most striking, but throughout the body there is an enormous amount of subcutaneous fat deposit; the following measurements give an idea of his form:

Height,	-	-	-	-	129	cm.
Head, glabella to occiput,				-	53 $\frac{1}{2}$	cm.
Measurement around breast,				-	81	cm.
“	“	arm,		-	28	cm.
“	“	forearm,			21	cm.
“	“	wrist,	-	-	16	cm.
“	“	abdomen,	-		95	cm.
“	“	thighs,	-	-	49	cm.
“	“	legs,	-	-	35	cm.
“	“	ankle,	-	-	24	cm.

Skin all over the body is dry; his hair is very dry; it grows very slowly, mother says more slowly than her other boys'. His finger-nails do not grow, they never have to be cut, nor does he bite them; his toe-nails have to be cut once or twice a year. His head has a peculiar shape; there is a marked curve upward and backward from the forehead. His face is flat and broad, the forehead *low*. His color varies; sometimes his skin is very pale, again his cheeks are quite flushed. When in repose, the face has a dull, stupid expression; he blinks a good deal. Ears large.

Sense of smell, tested by lemon, apple, onion, vinegar, and rose, shown to be perfect. Sense of taste, tested by salt, vinegar, wine, sugar-water, water slightly diluted with wine, and lemon, perfect. Hearing extremely acute; identifies sounds, and hears a ticking watch at a distance of 60 cm. Touch, temperature, and pain sense are normally developed.

Tremor.—When in repose there is no tremor, but there is a volitional tremor; if asked to hold the arm out, a fibrillary tremor is observed; this becomes more and more marked, the finer the movement to be executed. In buttoning his coat, the tremor describes an arc of several centimetres. Reflexes present, patellar and ankle reflex somewhat exaggerated.

Speech extremely guttural and inarticulate; stammers and lisps; voice markedly husky.

Gait.—He has the side to side, waddling gait of a very fat person; at the same time there is a spastic element in his walk.

Eyes.—Eyelids granulated; conjunctivæ quite red. Pupils do not react to light. He distinguishes night and day; even in a bright light the only color that he invariably identifies is yellow.

Dr. Cowan's examination, made in March, 1895: Marked atrophy of the optic nerves and retinæ; opacity of the vitreous. Slight drooping of the right side of the mouth; tremor of the muscles about the mouth and chin when he speaks. Tongue not thickened; *no tremor on protrusion*. Teeth excellent. Tonsils normal. Neck short and very fat. Palpation of the thyroid gland negative.

Lungs.—Inspection, very slight chest expansion in inspiration. Palpation gives no real fremitus. Percussion, no lung resonance can be brought out over the enormously thickened muscles. Voice sounds distant and muffled.

Heart.—Inspection or palpation give no evidence of an apex beat. Percussion, no area of heart dulness made out. Auscultation, heart sounds vary; some days they are quite muscular in quality, again not so. There is always irregularity in the heart beats; no intermission, occasional remission. Pulse, irregular, slightly slow at times; expansile and dicrotic.

Abdomen—Note all over abdomen flat; no organs can be defined. Extremities.—Measurements given. Genitalia.—Penis and scrotum, small and undeveloped. No glandular enlargements can be made out, but palpation is extremely unsatisfactory. Bowels move daily, one movement, green. Temperature per rectum 97 to 98 degrees during the whole treatment. Urine.—Passes a good deal of light-colored urine. Appetite not good.

*Treatment.*—At the Mount Sinai Hospital the weight of the patient was much less (86 pounds) than at the beginning of treatment by the writer, with an initial weight of 97 pounds and 8 ounces, February 18, 1895. The thyroids were given, and at the end of treatment the weight was 106 pounds and 4 ounces, fully six months of continuous treatment of thyroid extract (alcoholic), as much as seventy-two drops a day, and fully six

months more of tablets of dried thyroid (Welcome & Burrough), as much as ten grains daily.

During the time of treatment it was noted that the urine was passed to the amount of 3400 grammes daily, and several tests of urea give only twenty grammes excreted daily.

*Epicritical Remarks.*—This very unique case, aside from the thyroid therapy, is not only of interest as far as the obesity, but but also the nervous symptoms, are concerned. There is no case which is its counterpart in the published literature, and it may be noted that this case was published by Dr. Dessau in *Pediatrics*, 1896, after it had been sent by the writer to the Montefiore Home.

The writer has seen cases of stout children, one weighing 86 pounds, a girl eight years of age. This child was exceedingly bright. He has seen others equally as stout, at least within a few pounds, and they had a noticeably simple demeanor; did not seem to be as bright as other children of the same age. No case, however, shows the semi-idiotcy of the case just related, nor any of the other symptoms, tremors, loss of sight, detailed. The thyroids did not alter these symptoms; in fact, they seemed on the advance, if anything, during treatment. As far as the treatment of obesity with thyroids is concerned, we have cases of adults, published by Plicque, Lichtenstern, Mendelsblatt, Davis, Mackenzie, Charrin. The most interesting sets of cases are those of Davis (*British Medical Journal*, 1894), in which the weight was reduced much more effectively with thyroids and dieting, than with thyroids alone. It would seem that though this was not tried in our case, the symptoms referable, particularly to nervous degenerations, could scarcely be improved, such as the amaurosis, even though ten or twenty pounds reduction had been attained. The rectal temperature was not raised by the thyroids.

#### HYDRÆMIC ANÆMIA.

The grounds for thyroid therapy in cases of anæmia, and especially those in which there is a slight enlargement of the thyroid, with or without an hydræmic condition, is founded on more scientific data than the treatment of obesity or fat accumulation with thyroids. I have mentioned in the introduction the early work of Horsely and the facts of the rapid improvement of the anæmia in cretinism under the use of thyroids. We will



not say that the hydræmic state in some of the severe anæmias is in any way due to the same cause as myxœdema, but in one of the cases (Case II.) the picture of the face of the case certainly reminds us of similar state seen in myxœdema.

CASE I.—Female child, eight years old, May 13, 1896.

*Family History.*—Mother lost two children, one of diphtheria, one of meningitis; has had five miscarriages since birth of last child, at two, three, four, three, and six months respectively.

*Personal History.*—Birth normal; breast-fed child; always a weak baby; sat up at one year; one tooth at two years; walked at two and-one half years; when three years old, had measles; three and one-half years old; pneumonia when four years old.



HYDRÆMIC ANÆMIA IN GIRL AGED EIGHT YEARS, BORN IN THIS COUNTRY OF FOREIGN PARENTS.

Mother says that the child has always been pale since birth. Epistaxes during the last two years, especially in summer time.

*Present Status.*—Child's mental condition is up to par; is well liked at school and bright in her classes; is regularly promoted. Child fairly well grown; very pale, pallor peculiar, clay like. Head, square type, especially over parietal bones. Features of Mongolian type. Marked puffiness of lower eyelids, also

puffiness of the cheeks; mucous membrane pale; teeth poor.

Trunk shows very poor muscular development. Chest very narrow and rhachitic, slight pigeon breast and beading of ribs. Heart not perfectly regular in rhythm; at times slowing perceptibly. Pulse 87. Abdomen large. Liver to the free border of the ribs in mammillary line. Spleen not felt. Epiphyses of elbows and ankles prominent. Slight enlargement of the isthmus of the thyroid. Sleeps well, bowels regular, appetite very poor. Temperature per rectum, 99 degrees. Red and white cells, as 483 to 1. Hemoglobin 55. Urine, 1016, acid, no pro-teids, no sugar.

*Treatment.*—Thyroid extract—Parke, Davis & Co.'s preparation.

Initial dosage, one-half grain, twice a day.

May 22d, dose increased, one-half grain three times a day.

May 28th, dose continued, one-half grain three times a day.

June 12th, dose increased, one-half grain four times a day.

There is a slight decrease in the facial puffiness, color slightly improved. Hemoglobin 62. Urine, 1010, acid, no albumen, no sugar.

July 1st. Child kept on two grains of thyroid a day; this continued the entire summer.

September 3, 1896. Child was seen every third or fourth day the entire summer. There seems to be an improvement up to a certain point; the puffiness seems very much improved compared with condition in May. Pallor improved slightly.

Hemoglobin July 1st, 65; July 13th, 60; August 10th, 70; September 3d, 60.

Hemoglobin October 20th, 58; December 15th, 65; January 3d, 62.

January 15th. (?) Thyroid stopped and child put on iron. Hemoglobin February 16th, 75.

*Epicritical.*—Though the improvement with thyroids alone was evident, it was not radical. The puffiness of the face and eyelids, color of the skin, and spirits of the child improved, and yet the pallor continued, the hemoglobin mounting in the course of a treatment of fully a year 25 per cent. Lately the thyroids have been combined with iron, administered with a further improvement in the hemoglobin.

The treatment seemed to especially benefit the hydræmia and but slowly the anæmia.

CASE II.—Male child, aged fifteen months. October 13, 1896.

*Family History.*—Negative.

*Personal History.*—Breast-fed, fairly healthy, baby always pale; sat up when ten months old; one tooth when eleven months old; is beginning to walk.

*Present Status.*—Child fairly bright; plump, but flesh very flabby; child pale, greenish yellow color; puffiness of lower eyelids; conjunctivæ and mucous membrane of mouth very pale; head square; parietal bones prominent; fontanelle two inches by one-half inch; jaw square; two teeth, lower central incisors.

Chest, slight, rhachitic; sonorous and sibilant râles; heart normal; abdomen, large; liver and spleen palpable as far under of ribs; extremities normal; inguinal glands large; bowels regular; sleeps well; temperature per rectum, 98 degrees; urine, specific gravity 1025, acid, no albumen, no sugar.



HYDRÆMIC ANÆMIA IN CHILD AGED  
FIFTEEN MONTHS.

Hemoglobin 30; treatment thyroid; October 29th, hemoglobin 30; November, hemoglobin 30.

The child seems brighter, and the puffiness of the face and eyelids seems to have improved, but the hemoglobin remained stationary, or nearly so, for some time, until after three months the child was placed on in addition an easily assimilable form of iron. The hemoglobin at this time was 58. White cells 10,400. Red blood cells 4,730,000. Under the iron, which at intervals has been combined with thyroids, a steady improvement has taken place.

In this case the color of the skin, the spirits of the child, the puffiness, improved under a purely thyroid therapy, but the condition of the blood remained much the same. The hemoglobin did not advance markedly in percentage until a protracted period of thyroid iron was combined with the treatment. The skin was certainly much improved with the thyroid alone, the puffiness of the eyes and lips certainly diminished, and the skin was of a less greenish hue. In this infant, the dietetic conditions, one of the most important in the treatment of all anæmias, was at its worst. The infant was underfed, and did not receive the correct food at that. When iron was added to the drug list, the hemoglobin mounted, and to-day continues to improve. It is a question as to whether the preparatory course of thyroids could have been beneficial. For we know how difficult the treatment of these cases with iron alone has always been.



The treatment of cases of intense anæmia in infants has always been difficult. I have had numerous cases in which the anæmia was combined with slight or marked symptoms of rhachitis; in other cases this was not so.

I have at present a child aged two years, showing slight symptoms of rhachitis, but having also extreme anæmia. In this case there was a long history of gastro-intestinal disturbance. I have placed the child under a combined treatment of thyroids and iron. I find after a month, a marked improvement in the appearance of the skin; it is not as waxy and puffy as at the outset of the treatment; the spirits of the child have markedly improved.

In a girl of sixteen years, suffering from chlorosis, the combined administration of thyroids and iron has done more for the improvement of the anæmia than a previous course of iron alone. In this case there has been an improvement in the percentage of hemoglobin, and the color of the skin and puffiness of the face. I have placed these tentative data before you in order to suggest the more universal use of the thyroids in diseases of the blood and bones, that some definite conclusion may be formulated in regard to this valuable remedy.

66 EAST FIFTY-EIGHTH STREET.

## A CLINICAL REPORT OF A CASE OF INFANTILE SCURVY.\*

BY D. J. MILTON MILLER, M.D.,

Philadelphia, Pa.

The patient, a male infant, ten months old, living amidst the most unfavorable hygienic surroundings, in a section of the city occupied by the lowest white and colored population, first came under observation at the dispensary of the Children's Hospital on the 4th of February, 1897. From the mother, a very intelligent colored woman, the following history was obtained. The child was born free from disease, of healthy parents. From the beginning it was fed artificially. For the first three weeks condensed milk was given. This failing to agree, boiled cow's milk was substituted, and continued for three weeks longer, when the persistent vomiting which it caused compelled a third change in its food—a moderately thick oatmeal gruel, sweetened with cane sugar. On this food alone it has subsisted ever since. Until its present illness, it has been fairly well, although always undersized and thin. Three weeks ago, the mother noticed that the patient cried when handled, as if in pain, and that it was more fretful and nervous than usual, and refused its food. Two weeks later swelling and bleeding of the gums were noted. It was this latter symptom that caused the mother to seek medical advice.

On admission the patient presented the following conditions: An undersized male infant; muscles flabby and wasted. Fontanelle of normal size. Eight teeth, the four upper and four lower incisors; gums swollen over the site of the upper anterior molars. Evidences of rickets, as shown by slight rachitic rosary, distended abdomen, and some epiphyseal enlargements. The gums over the incisor teeth are swollen, and of a deep purple color; their surface is covered with extravasated blood; they bleed readily at the slightest touch, and from the movements of the lips in crying; the swelling is so great that the teeth are almost entirely concealed from view. The legs seem tender to the touch; but they are not enlarged or swollen, nor is there any

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\* Read before the Philadelphia Pediatric Society, May 11, 1897.

swelling of the thighs or knees. Pressure, however, upon the lower limbs in general seems to give pain. There are no ecchymoses. The child is fretful, and has an anxious expression. The bowels are constipated, and the appetite poor. Vomiting is rather frequent.

A mixture of equal parts (three ounces each) of fresh cow's milk and lime water every three hours was prescribed, with two teaspoonfuls of orange juice, and one of fresh beef juice, at the same interval.

*February 10, 1897.*—The child is no better. The gums are almost in the same condition, but perhaps bleed a little less. The forearms on both sides, from the middle third to the wrist, are swollen and quite tender. Both legs, from a little below the knee, and down to and including the ankle and the dorsum of the foot, *are very much swollen*, the left more than the right, and so tender that the child screams when they are handled. Over the swellings in both the upper and lower limbs the skin is glossy and tense, but not œdematous. The temperature is normal.

Inquiry discovers that the mother has not followed the directions given, the orange and beef juice having been administered in an irregular and indifferent manner. Four ounces each of fresh cow's milk and barley water, with one ounce of cream, every four hours, was ordered; orange juice, one-half ounce, three times daily; beef juice as before.

The patient failed to return after this. But a visit to the house one month later found the infant completely recovered, as far, at least, as the scorbutic symptoms were concerned, although it was still thin and anæmic. The rapid recovery was the mother's reason for not returning to the hospital. By the fifth day after the second visit, the improvement was so marked that she did not think further treatment was necessary.

Cases of infantile scurvy have been so frequently reported in this country since Dr. Northrup first called the attention of the profession to the prevalence of the disease in America, at a meeting of the American Pediatric Society, in September, 1891, that a detailed account of its symptoms, diagnosis and treatment would not only be superfluous, but quite beyond the scope of a clinical report. There are a few points, however, which seem worthy of comment in connection with the case here reported.

The first is the variety of food used before the scorbutic symptoms made their appearance. As is well-known, the



“persistent deprivation of fresh food” is the most common, if not the only, cause of this peculiar form of infantile cachexia. Usually there is a history of the routine administration of some proprietary food, or of condensed or sterilized milk, or even of fresh milk very largely diluted with water or some other substance. In our own case, oatmeal gruel, administered for over a period of eight months, was the etiological factor. Of the forty-one reported cases of infantile scurvy which the writer has been able to collect from American literature since Drs. Northrup and Crandall tabulated thirty-six cases with detailed histories, in a paper read before the New York Academy of Medicine, on February 15, 1894, we have found but one with a similar etiology—that of Dr. T. H. Machell’s (*Canadian Practitioner*, 1895, xx., 659), in which a child was fed exclusively upon sweetened oatmeal gruel from the fifth month of life until presented for treatment at the eleventh month, a period of six months. Curiously, all the brothers and sisters of this patient were weaned at the fifth month, and fed on oatmeal gruel, but did not become scorbutic.

The second point is the rarity of the disease among the class of patients that frequent the dispensaries and out-patient departments of hospitals. The parents of these little patients, whatever their shortcomings in regard to infant feeding, cannot be accused of depriving their children of fresh food, or of keeping them too long upon a diet lacking in variety. These children usually partake of the ordinary food of their elders at a very tender age; and although they may acquire rickets, or a chronic intestinal catarrh, or become marasmic, they do not, as a rule, get scurvy. The latter affection, all observers agree, is pre-eminently a disease of the well-to-do, who not only can afford the patented products of the manufacturer, but are also apt to be over-careful and rigid as to their children’s diet. In the table of Drs. Northrup and Crandall, already referred to, but ten out of thirty-six cases belonged to the non-private class, and of these only six were from dispensaries, the remaining four being inmates of institutions, where we would expect the same dietetic causes to obtain as in private practice, *i.e.*, a rigid and carefully planned dietary. In our own collection of forty-one cases, with detailed reports, only fourteen were dispensary patients; and the proportion becomes much less if we add to the whole number of cases fourteen more, which we have found simply

referred to, but without reports.\* Thirteen of these fourteen cases are reported by two observers: Seven by Joseph Leidy, Jr., of Philadelphia (*Boston Medical and Surgical Journal*, 1896, cxxxv., 437), and six by C. W. Townsend, of Boston (*Ibid.* 1896, cxxxiv., 509), whose experience in this respect is quite unique among American writers. The writer has only seen two cases during his connection with the dispensary of the Children's Hospital of this city, now extending over a period of ten years. One of these was seen many years ago, and was unrecognized; the other is the subject of this paper. W. Lester Carr (*Medical Record*, 1894, xlv., 811) has had a similar experience. At the children's class at Bellevue he only saw one case of infantile scurvy among 2352 patients, and in 1000 new cases at the dispensary of St. Mary's Free Hospital for Children, not one. He also mentions that Dr. Purdy has had a similar experience at the Children's Hospital.

Lastly, from the numerous reports of infantile scurvy that have appeared in the journals during the past six years, one must conclude that this affection is of increasing frequency in this country, since the paucity of reports prior to 1890 cannot entirely be ascribed to want of familiarity with the clinical features of the disease, but also to the increasing use of sterilized milk and preserved foods, especially the proprietary foods, which enterprising and ingenious manufacturers have thrust upon confiding mothers and over-credulous physicians to such an enormous extent during the past ten years—indeed, one can almost say that the spread of the infantile scurvy has been coincident with the increasing use of these products.

345 SOUTH EIGHTEENTH STREET.

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\*Making fifty-five cases, of which fourteen were from dispensaries.

# ANTI-STREPTOCOCCIC AND ANTI-DIPHTHERITIC SERUMS IN TREATMENT OF CASES OF MIXED INFECTION.

BY F. SPENCER HALSEY, M.D.,

New York.

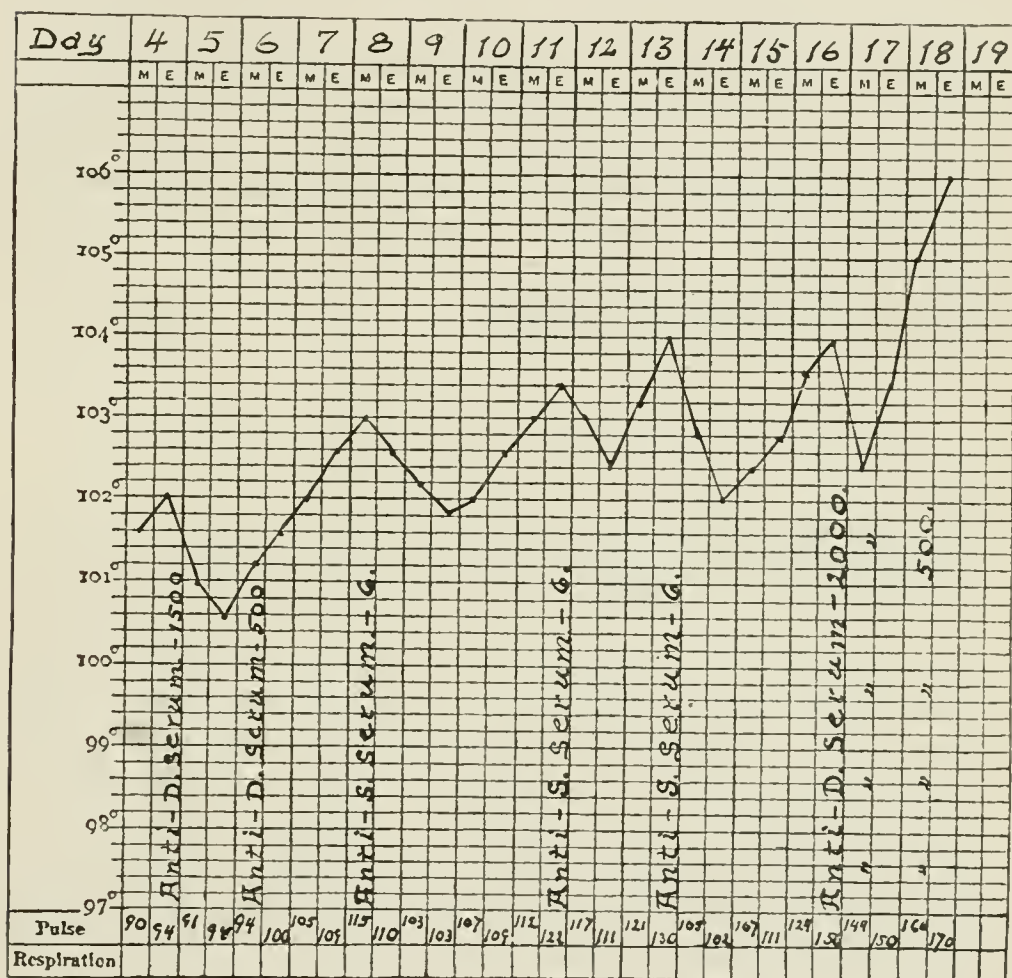
As is the truth of the old adage, "One swallow does not make a summer," so may it be said that one case does not make a record either for or against the usefulness of any remedy. Still, as the whole is made up of individual units, I think the reporting of even one case may be of interest. The case which I wish to report is one in which anti-streptococcic serum was used, and, although it had a fatal termination, proved to my mind that in this serum there may be great worth.

On October 21, 1896, I was called to see John W., aged two years, three months. I found that the day previous he had been taken with an attack of vomiting, which was followed by fever and sore throat. On examination the child had temperature of 101° F., the throat was congested, and the neck and shoulders were covered with a faint rosy rash. Scarlet fever was suspected, but diagnosis was not made certain until the following day, when the appearance of rash left no doubt. He was put on appropriate remedies, and progressed favorably until the 27th, when, on examining the throat, a patch was seen on the right aspect of the left tonsil. The patch had every appearance of diphtheria, and accordingly 1000 units of anti-diphtheritic serum (P. D. & Co.) were injected into the right thigh. A bacteriological culture taken revealed the Loeffler bacillus, and confirmed the diagnosis. Twenty-four hours later the patch had become denser in color, but still seemed firm. A second injection of 500 units was, therefore, given, and on the 31st, the patch had entirely disappeared.

On November 1st, in the morning, it was noticed that the child was very feverish, and was sweating. The temperature was taken and found to be 103° F. Dr. D. H. Stewart was called in consultation, and advised the use of the anti-streptococcic serum (P. D. & Co.), as there was evidence of septic poison-



ing. Accordingly 6 cc. of the serum was injected. In the evening the temperature had fallen to  $102.3^{\circ}$  F.; the next morning it was  $102.1^{\circ}$  F.; by the evening was  $101.4^{\circ}$ , and the child was easier. The next day it began to rise slowly, and by the evening of the 4th was  $103.2^{\circ}$  F. A second injection of anti-streptococcic serum was given, the same amount as before, and again the temperature fell, until on the evening of the 7th it reached  $102^{\circ}$  F. The next day it began to rise again, and a third injection



TEMPERATURE RANGE IN A CASE OF MIXED INFECTION TREATED BY SERUMS.

tion was given, and as before the temperature fell; but it was found on the 9th, after a rise of temperature, that the child had re-infected itself, and a large diphtheritic patch appeared on the left tonsil. Two thousand units of anti-diphtheritic serum were immediately given, and were repeated on the 10th, and 500 on the 11th; and in the afternoon of the 11th he coughed up a membranous cast about two inches long and half an inch in width. The infection, however, was too complete, and the temperature

ran rapidly up until it reached 106° F., and at nine P.M., on the 11th he died.

While there is little, perhaps, in this case to warrant any just criticism of the value of the anti-streptococcic serum, yet it seems to me that there was a decided reaction after each injection, with a fall of temperature, as much as two degrees in one instance. The severity of the mixed infection makes it doubtful just how much good was accomplished by the serum used; but I am certain that it must have retarded the onward advance of the poison, as from the 31st until the 9th it was given alone. In future I shall try the serum in similar cases, and I think in time to come we shall find in either it, or an improvement based on the same lines, a worthy weapon with which to fight septic poisoning. The temperature range is shown by the accompanying chart.

123 WEST SIXTY-NINTH STREET.

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**Happe : Asiatic Cholera in Children.** (*Fabrbuch f. Kinderheilkunde.* B. xlii., H. iii., iv.)

During the Hamburg epidemic, six hundred and ninety-seven infants under one year of age came down with the cholera. Six hundred and twenty-six died, 89.66 per cent. Seventeen hundred and one were between one and five years. Eleven hundred and seventy-three died, 75 per cent. Seventeen hundred and thirty-one were between five and fifteen years; of these seven hundred and seventy-six died, 45 per cent. One hundred and fifty-four were given intravenous injection. One hundred and one died. Eighteen received sub-cutaneous injection, twelve died. One hundred and thirty-three received the calomel treatment, forty-two died. Forty were treated with tannin, thirteen died. Twelve were treated with opium, two died.

The duration of the disease was from five to nine days.

In addition to the hypodermic and transfusion treatment, hot baths, 38-42°, were frequently brought into use. Water, beef-tea, and ice were freely given.

## Clinical Sketch.

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### INFANTILE SCORBUTUS.

BY FLOYD M. CRANDALL, M.D.

The occurrence of scurvy among infants is a fact too well established to require argument or demonstration. It is no doubt increasing in frequency, but there can be no doubt, also, that cases had passed unrecognized before the frequency of its occurrence had been demonstrated. While the disease in infants presents the general characters seen in scorbutus of adults, it differs decidedly in many of its clinical manifestations. This the writer has recently had opportunity to demonstrate in the Randall's Island Hospitals of New York, where adult and infantile scorbutus were present at the same time.

Well developed cases are so characteristic in their manifestations, that error in diagnosis should not occur. Mild cases are sometimes so obscured that positive diagnosis is difficult. Cure, however, is so easy, and treatment so rational and simple, that no suspicious case should ever be allowed to go on to the stage of definite symptoms. The case reported in the present number, by Dr. Miller, is typical, and may be studied with profit by every practitioner who ever has an infant for a patient.

All the lesions of scurvy are hemorrhagic in character, due probably to diapedesis. The most characteristic are subperiosteal hemorrhages, chiefly of the long bones. The femora are most commonly affected and there is a tendency to separation of the epiphyses. Hemorrhages into the mucous surfaces are usually present, the gums being chiefly affected. Hemorrhages into the skin and mucous membranes are more or less constant.

Lack of fresh food is the most important cause of scurvy. The use of condensed milk and proprietary foods without a sufficient quantity of milk, produce more scurvy than all other causes combined. Even fresh milk in small proportions is not sufficient to insure protection.

The disease occurs in every grade of the social scale, but is more frequent among the rich than among the poor. The neglected child who eats everything at the table may become



rhachitic or marasmic, but he obtains enough fresh food to protect him from scurvy. It very rarely occurs in asylums and hospitals, because in recent years feeding in such institutions has been more rational than in many private families. It may appear at any period of infancy or early childhood, but is most common between the ninth and fourteenth months, that is, at about the end of the first year.

The essential symptoms may be divided into two groups, according to their frequency and importance. In the first or primary group are: pain on motion, painful swelling of the lower extremities, spongy and bleeding gums. The secondary symptoms are: subcutaneous hemorrhages, pseudo-paralysis, hemorrhages from the cavities of the body.

Pain on motion is a constant symptom; it develops early, and is frequently so intense as to cause the child to cry out at the slightest jar or motion. In the early stages it is frequently difficult to determine its exact seat. The mother is sometimes positive of its presence before it can be located, or any swelling or other local evidences of disease can be discovered.

Painful swelling of the lower extremities is one of the most characteristic and constant symptoms; the upper extremities are rarely involved. The thigh is affected more frequently than any other region. The swelling is above and not at the knee-joint, as in rheumatism. The skin over the swelling is, as a rule, tense and shining; it is often purplish or livid, but sometimes appears normal in color; it is of normal temperature, and does not pit on pressure. As the swelling subsides, thickening of the shaft of the bone is in some instances detected. Liability to fracture at the epiphyses is a marked feature.

The condition of the gums is, also, a very constant and characteristic symptom. They are purplish, soft, spongy, and bleeding, and frequently show decided ulcerations. When the teeth have not been erupted, changes in the gums are usually slight or entirely absent.

Subcutaneous hemorrhages, as well as hemorrhages from the cavities of the body, are very common, but are not necessary to a diagnosis of scurvy. The subcutaneous hemorrhages are variously described by different observers as purpuric, ecchymotic, and petechial. In the writer's experience these hemorrhages are inclined to assume a larger size in infants than in adults, that is, they are more frequently ecchymotic than pete-

chial. Hemorrhage sometimes takes place in the eyelids, causing "black eye," and adding greatly to the wretched appearance of the little sufferer.

A varying degree of immobility of the extremities is common, and is frequently so marked as to simulate paralysis. This pseudo-paralysis disappears with the subsidence of the scorbutic symptoms. It is one of the most striking and interesting symptoms of infantile scorbutus. It is probable that the condition is due to the pain caused by contraction of the muscles on their tender periosteal attachments. This may become so intense that all motion is instinctively avoided. When joint irritation exists, there is local reflex muscular rigidity, which also operates to prevent motion. It is to be distinguished from other paralytic affections by the accompanying symptoms of scurvy, normal knee reflexes, and speedy subsidence on anti-scorbutic diet. The spine and upper extremities are sometimes affected, but more commonly the lower extremities alone are involved.

Scurvy is frequently superadded to rickets, but in a considerable number of cases no evidences of rickets are present. So-called *acute rickets* is in most cases, probably nothing more than rickets with scurvy added. Anæmia and malnutrition are commonly present; a peculiar sallow and metallic pallor is frequently seen, and is regarded by some as quite characteristic. Scurvy occurs sometimes, however, in infants who appear to be otherwise in very good general condition.

Fever is frequently present, and is commonly intermittent in character. It rarely goes above  $101^{\circ}$ , but occasionally reaches  $103^{\circ}$ . It seems in many instances to be an integral part of the disease, but sometimes it seems to be clearly due to other causes. The condition of the bowels varies, but diarrhœa is more frequently present than constipation.

To summarize the clinical characters of the disease, we may say that children suffering from scurvy commonly present the following symptoms: Anæmia, intense pain on motion, spongy and bleeding gums, swelling of the lower extremities, usually at the thigh. There may also be purpura or ecchymoses, discharge of blood from the various cavities of the body, and pseudo-paralysis. It may be mistaken for rheumatism, stomatitis, rickets, sarcoma, osteitis, and infantile paralysis.

Scurvy, when untreated, is a very fatal disease; when recognized and properly treated, a rapid and complete cure is usually

effected. The result of anti-scorbutic treatment is, in fact, one of the most certain means of diagnosis. There is, without doubt, some uncertainty regarding the true nature of scurvy and its causes, but from the standpoint of treatment it is a dietetic disease and must be cured by dietetic treatment. Certain complications and coincident conditions may be relieved by drugs, but it should be clearly understood that drugs are absolutely unavailing for the cure of scurvy. Fresh cow's milk, properly modified, is alone capable of effecting a complete, speedy, and brilliant cure. Expressed beef juice and orange juice are valuable adjuvants, and should be employed in all serious cases if their administration is tolerated.

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**De Luca and D'Angerio: The Antitoxic Power of the Thyroid Gland.** (*Rivista Medica e Terapeutica*, 1896; *Centralblatt für Chirurgie*, 1897; *New York Medical Journal*. 1897. Vol. lxx., No. 14.)

In order to study the question of whether it is the function of the thyroid gland to destroy poisonous material circulating in the blood, the authors have tested the toxicity of the urine of dogs before and after removal of the gland, on the supposition that that would serve as an index of the amount of toxic matter circulating in the blood. In the estimation they employed Bouchard's method. They have come to the following conclusions: After removal of the thyroid gland the urine contains a greater percentage of poisonous matter than that of healthy animals does; the urotoxic co-efficient begins to rise gradually even before the nervous symptoms attributable to the operation set in, and reaches its maximum coincidently with their appearance; animals that are kept without food also show an increased toxicity of the urine, but not so great an increase as is caused by the operation; the administration of thyroid juice is capable of first moderating the increment of urinary toxicity and then reducing the toxicity; accordingly, in the organism of a dog that has been deprived of the thyroid gland there are toxic materials in excess, and thyroid gland juice serves to neutralize them.



# ARCHIVES OF PEDIATRICS.

DEVOTED TO THE

DISEASES OF INFANTS AND CHILDREN.

JULY, 1897.

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## INTUBATION.

The paper by Dr. O'Dwyer in the present number is a notable contribution to medical literature. His great experience and absolute mastery of every phase of croup and its operative treatment, must render every other medical man his pupil when he speaks upon that subject. His paper will be read, therefore, with profound interest by every practitioner who performs intubation or encounters croup in his practice. The method of reducing inflammation in the subglottic region by the use of astringent gelatin, as described in the history of the last case, was a most brilliant conception.

Intubation has been for a decade regarded as one of the most brilliant achievements of American medicine. Since the advent of antitoxin it has been brought into even greater prominence, and is now esteemed more highly than it has been at any other time in its history. Intubation and antitoxin are in a most striking way the complements of each other. Each, alone, is effective in reducing to a marked degree the mortality of one of the most fatal of diseases. Hand in hand they have reduced that mortality to a point that would have been incredible twenty years ago.

This complementary action of intubation and antitoxin is remarkable and very interesting. Intubation has accomplished all that was ever claimed for it: the relief of laryngeal obstruction. This it has done perfectly. But diphtheria, unfortunately, when it has involved the larynx, shows, also, a strong tendency to invade other portions of the respiratory tract. Children who die after intubation has been performed, do not succumb to obstruction of the larynx but to sepsis or extension of diphtheritic processes into regions inaccessible to mechanical treatment. For years the profession was in search of some means of checking that extension and limiting the disease to the larynx, where it could be rendered comparatively harmless by the intubation tube. Antitoxin accomplishes that result in a very large number of cases. Intubation does what it did ten years ago—it overcomes mechanical obstruction of the larynx. Antitoxin so controls the diphtheritic process which induces that obstruction and so prevents its extension and the development of complications, that the disease is confined to the region in which it can be overcome by the tube, and is so limited that the child weathers the storm and escapes death from sepsis.

Antitoxin alone has scored many victories in diphtheritic croup, and intubation alone has its victories. But each has its limitations, and must fail to cure in many case. The one cannot overcome disease which has extended beyond certain narrow limits; the other cannot always control the disease within those limits. Combined, each overcomes the defect of the other and accomplishes results which neither alone could ever attain. This fortunate combination of remedial agents has been effective in producing marvelous results, whose record forms one of the brightest pages of medical history.

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#### CONGENITAL STENOSIS OF THE PYLORUS.

The cases of this peculiar condition reported in the present number by Dr. Ashby are of extreme interest. Very few such cases have been recorded in this country. It is probable, how-

ever, that certain conditions that have been regarded as malignant, were in fact of this character. Several cases have been reported recently in England and Germany. Dr. Ashby's paper, by drawing attention to the subject, may elicit the reporting of other cases on this side of the water.

The pathology is extremely obscure. No tenable or wholly satisfactory hypothesis has yet been offered and probably will not be until more extended and thorough observations have been made. The various hypotheses were reviewed by Dr. Thomson, recently, in the Edinburgh Hospital reports, an abstract of which appeared in the last number of this journal.

The symptoms, Dr. Ashby believes, are sufficiently distinctive in typical cases to offer no great difficulty in diagnosis. For a week or more after birth there may be no symptoms of any kind. Vomiting then begins and might at first lead to a diagnosis of simple gastric catarrh. Vomiting, however, persists; it occurs several times a day but does not necessarily follow every meal. Several meals may be taken without apparent difficulty, when suddenly a large amount of fluid including the milk previously taken will be ejected. This vomiting is forceful and not a mere regurgitation of food. The ejected matter is never biliary. The infant is perfectly comfortable only when the stomach is empty. Constipation with small stools is usually present. Occasionally a small elongated tumor may be felt just above and to the right of the umbilicus. The abdomen is rarely distended but the dilated stomach may sometimes be determined by percussion. Wasting is a prominent symptom; it is progressive and as time goes on it becomes extreme. The more marked cases are invariably fatal.

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#### THYROID THERAPY.

The marvellous results obtained by the use of thyroid extract in myxœdema have naturally and very properly led to its use in a variety of other diseases. Its remarkable action in myxœdema and allied conditions, if it presented no other evidences of po-



tency, would lead to the expectation that important results might be expected from its use in other pathological conditions. Its marked diuretic action and power to reduce adipose tissue together with other evidences of ability to stimulate metabolism would strengthen that expectation. While no rational physician expects to find in it a *cure all*, it is entirely proper that the medicinal properties of such a remarkable substance be fully determined by administering it in different diseases, and that its uses and limitations be established. With this object in view, Dr. Koplik administered the drug to several children suffering from conditions which previous experience suggested might be benefited by its use. A full record of those cases will be found on another page of this number. While the results were not particularly striking in the cases in question, the record will aid materially in establishing the position of the thyroid gland as a therapeutic agent. That it is destined to occupy an important place in the materia medica is beyond question and every effort is a laudable one which attempts by honest and scientific observation to fix its true position. The next issue of this journal will contain papers by Dr. Kerley and Dr. Huber, describing the action of thyroid extract in goitre, the results in each case being very striking.

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The occurrence of the Queen's Jubilee is celebrated by the *Practitioner* by a special commemoration number reviewing the progress of medicine during the Victorian era. Thirteen papers are devoted to various departments of medicine and surgery. Several of these, as bacteriology, antiseptic surgery, and scientific nursing, have been born and reached their present maturity during that era, while all have been more or less completely revolutionized. The June number of the *Practitioner* will prove of unusual interest to the American as well as the English reader.

## Memoir.

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DR. J. LEWIS SMITH.

In the death of Dr. Smith the department of medicine, with which his name was so long connected, has lost one of its oldest and most notable figures. With the single exception of Jacobi, no other name was for years so well-known in pediatrics as was that of J. Lewis Smith. He began to study the diseases of children during the first years of his practice, and for forty years his interest in those diseases never flagged. In conversation with the writer but a few days before his death, he expressed the intention of continuing to contribute to literature while strength was given him, and expressed most feelingly his love for the department of pediatrics. It is certainly a source of satisfaction that this desire to remain in the harness to the last was granted him.

Dr. J. Lewis Smith was born at Spafford, New York, on October 15, 1827. He came from Puritan stock, his ancestors having settled in Milford, Conn., in 1639. After the Revolutionary War his grandparents removed to Central New York, then a wilderness, and there Dr. Smith was born and passed his boyhood. At the age of seventeen he entered Yale College, from which he graduated in 1849.

After graduation, he began the study of medicine and entered the Buffalo Medical College in the following year. Through the influence of his preceptor, Dr. Austin Flint, he was appointed interne of the Hospital of the Sisters of Charity in Buffalo where he served one year, though not a graduate. In the meantime his brother, Dr. Stephen Smith, had commenced practice in New York City, and through his influence he completed his medical course in the College of Physicians and Surgeons, of New York, from which he graduated in 1853. He entered upon the practice of medicine in New York, which he continued uninterruptedly until his death on June 9, 1897.

Soon after beginning practice he was appointed physician to the North-Western Dispensary, and in 1858 published his first

paper on the diseases of children entitled, "Report of the *Post Mortem* Appearances in Eleven Cases of Cholera Infantum." From that time until his death he was a frequent and voluminous contributor to pediatric literature. It is known that he published fully 160 medical papers and articles.

The work upon which his reputation chiefly rests is "A Treatise on the Diseases of Infancy and Childhood," the first edition of which appeared in January, 1869. This work still continues to be one of the standard text-books on pediatrics, and was, probably, at the time of its publication the best that had appeared in English. It has passed through eight editions, the last of which was published in 1896.

Dr. Smith was not alone a practitioner and author, but he took an active interest in all that pertained to pediatrics. He was one of the founders and the second president of the American Pediatric Society; was president of the Pediatric Section of the Ninth International Medical Congress, held in Washington in 1887; and was at one time chairman of the Pediatric Section of the New York Academy of Medicine. He was an active and valued member of numerous other medical societies, to whose proceedings he was a frequent contributor.

As a hospital physician he had an extensive and varied experience. During his whole career he devoted much time to hospital practice, and the experience he thus gained was clearly evident in his writings. He was for many years physician to the New York Infant Asylum, the New York Foundling Hospital, and the Charity Hospital, and a consulting physician to the Nursery and Child's Hospital and the Infants' Hospital.

As clinical professor of diseases of children in the Bellevue Hospital Medical College for twenty years, he became personally known to hundreds of men who are now in the active practice of medicine. As teacher and author, he was, perhaps, instrumental in introducing more practitioners to the department of pediatrics than any other American physician.

Dr. Smith's interests were indeed many. As practitioner, teacher, author, hospital physician, and society attendant, he was ever in the harness. In none of these varied interests, in fact, did he relax his efforts as age advanced. He presented a case at the last meeting of the Pediatric Section of the New York Academy of Medicine, and prepared a paper for the Washington





Dr. J. Lewis Smith.

meeting of the American Pediatric Society. He continued to be active in his various fields of work until the last.

He did not escape his share of this world's trials and disappointments, but met them frequently, while several grave sorrows clouded his later years. The death of his son-in-law, Dr. Frederic M. Warner, to whom he was deeply attached, was a very severe blow, the result of which was apparent to all who knew him.

Dr. Smith was early successful as a practitioner, and continued to do an active practice during his whole career. His practice was always trying and exacting, as pediatric practice must be, demanding, as it so often does, immediate and prompt attention at all hours of the day and night. He possessed to a marked degree the priceless faculty of gaining the love and personal attachment of his patients, and held many families from generation to generation, his first attendance dating back to a grandmother forty years ago. Such loyalty to a physician in a large city where doctors are changed with great frequency and for slight reasons, is not due to chance, but is indicative of qualities in the practitioner, both professional and personal, to warrant it. This personal element in Dr. Smith's case was largely a peculiar kindness of nature and genuine sympathy for the unfortunate. Kindliness of heart and regard for the feelings of others were among the most prominent traits of his character. These characteristics and a certain unworldliness led sometimes to advantage being taken, and his time and services being obtained for less remuneration than he should in justice have received. His inability to see suffering without endeavoring to relieve it led him to do a vast amount of unremunerative professional work. A tale of distress was always sufficient to at once secure a discounted bill. No one who knew him intimately however, could believe that this was ever done for any but motives of the purest philanthropy. Few men, even in a profession always generous to the poor, have through a long career continued to do so much for them as did Dr. Smith. To few other men can be so appropriately applied that highest of titles, *the good physician*.

## Society Reports.

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### NEW YORK ACADEMY OF MEDICINE—SECTION ON PEDIATRICS.

Stated Meeting, May 13, 1897.

J. HENRY FRUITNIGHT, M.D., CHAIRMAN.

#### TUMOR RESEMBLING A SPINA BIFIDA.

DR. J. LEWIS SMITH presented a baby, three weeks old, with what appeared to be spina bifida. Nothing unusual had occurred during pregnancy, but the child was born about three or four weeks before full term. The spinal tumor measured thirteen inches in circumference, and was apparently increasing in size. The walls of the sac were translucent in places. The child had passed urine and fæces normally since birth. The speaker expressed the belief that the case was beyond either medical or surgical aid.

DR. ARTHUR L. FISKE referred to a case of spina bifida that he had treated. It was high up and had a small pedicle, and was removed by excision. The outlook appeared to be very good, but the child developed hydrocephalus, and died in a few months. It seemed to him in the case just presented, as the tumor was so low and there was no evidence of injury to the cord, there was a possibility of benefit from an operation.

DR. L. EMMETT HOLT thought there was room for doubt as to whether this really was a spina bifida or not. There was certainly a large solid mass which could not be a spina bifida. The tumor did not present the usual cicatrix; it was not symmetrical; it was more or less lobulated, and presented evidences pointing rather to sarcoma. He would certainly favor an exploratory incision.

DR. C. E. NAMMACK endorsed the opinion expressed by the last speaker, *i.e.*, that the tumor was a cysto-sarcoma.



CONGENITAL CONSTRICTIONS OF EXTREMITIES, WITH WEBBED FINGERS  
AND TOES.

DR. ARTHUR L. FISKE exhibited plaster casts and photographs of a case of this kind. The patient, a child of four years, had been admitted to the Babies' Hospital in January, 1896. The previous children in the family had been perfectly formed. This child also had a talipes equino-varus. On January 10th, he had excised the rudimentary finger on the left hand, and formed three good fingers on that hand. The bursa was removed from the outside of the foot, and the plantar fascia, tendon Achilles, and external lateral ligaments were cut, enabling him to bring the foot into place. The foot was retained by plaster in that position for two months. The child now walked squarely upon the foot, and had perfect use of the leg without artificial support.

## CASE OF BOW-LEGS—SKIAGRAPHS BEFORE AND AFTER OPERATION.

DR. FISKE also presented a boy, four years of age, upon whom he had done a double cuniform osteotomy on January 4, 1897, for the correction of bow-legs. The feet were kept up in plaster of Paris for two or three months in order to prevent recurrence. The child now walked very well. This child had a dermatitis on the front of one leg from exposure to the X-rays, but it subsided in a few days.

INTRA-CRANIAL SEQUELÆ OF NEGLECTED MIDDLE EAR SUPPURATIONS  
IN CHILDREN.

DR. EDWARD B. DENCH read a paper on this subject. He introduced the subject by exhibiting several specimens. The first was the ear of a newly-born infant. It showed that the external auditory canal was not bony, but a fibrous tube, that the upper and lower walls were in contact, and that in order to inspect it properly the auricle should be drawn downward and backward. The second specimen was the ear of an adult, and was presented in order that it might be contrasted with the infant's ear. The third specimen showed the incision in the mastoid process, and the fact that the mastoid antrum is the only mastoid cell existing at birth. The fourth specimen showed the condition found in the ear of a child of six or seven years.

Dr. Dench said that it should be remembered that in infancy the floor of the middle cranial fossa is complete, and that a process of the dura mater may actually dip down into the tympanum.

The same was true along the lines of union of the various portions of the temporal bone. This explained how inflammation might spread by continuity. The complications that might follow suppuration of the middle ear were: (1) Sinus thrombosis, affecting usually the lateral sinus; (2) epidural abscess; (3) diffuse meningitis; (4) cerebral abscess. General meningitis is the gravest of the complications, largely owing to the fact that the diagnosis was not made positively until operative interference was no longer of avail. It was difficult enough to make an early diagnosis of meningitis in the adult, but in the child it was practically impossible. He said that from his own experience with post-aural abscess he had come to feel that the physician should not rest content with simply opening the abscess, but should thoroughly clean out the mastoid process also. There was always danger of infection of the intra-cranial structures so long as any necrosed bone remained. If the middle ear inflammation were properly treated at its incipency, there was no doubt that the prognosis would be invariably favorable, and this, too, even in those cases occurring in connection with severe types of the acute exanthemata. Just as soon as any fluid accumulated in the middle ear there would be a characteristic narrowing of the canal, preventing a view of the drum membrane. It would be possible, however, in most cases, to obtain a view of the lower part of the drum membrane. That the tumefaction was at the lower part of the canal was shown by the fact that there was no difficulty in inserting the aural speculum. If there were evidence of such tumefaction, the physician should plunge a long, narrow knife through the membrane, and then the incision should be carried upward, the knife being kept in contact with the bony inner wall of the middle ear. After the incision, the ear should be irrigated with bichloride of mercury solution, 1 to 5000. He preferred this method to the insertion of a narrow drain of cotton, for the latter caused much pain and rendered recovery more tedious.

DR. HERMAN KNAPP said that above the attic was a notch in the membrana tensor, where the middle ear was covered only by skin, and subcutaneous or vascular tissue. The mastoid itself was one more or less compact mass, exhibiting one cavity connecting immediately with the attic. When the suppurative process occurred in the middle ear, it could exist in the middle

ear only in the antrum. The process might extend into the notch and upper portion of the mastoid. Sometimes in a sick child this portion would suddenly swell, and appear as if pus was present. With this there would be an improvement in the child's condition. It would often disappear just as suddenly.

Dr. Knapp reported a case of abscess of the temporo-sphenoidal lobe, upon which he had operated, and in which recovery had taken place. The child was about ten years of age, and when first seen had a copious and foul discharge from the ear. This showed that the discharge came from beyond the middle ear. There was also optic neuritis on both sides and hemianopsia. There were no other nervous symptoms, either paralytic or spasmodic. Dr. M. Allen Starr had seen the case with him, and had concurred in the diagnosis of abscess of the brain. The operation was begun by cleansing the ear and removing everything that might give rise to suppuration. During the operation, while working in the attic, the discharge suddenly stopped—a not infrequent occurrence. After about two hours operating, no abscess was found. As experience showed that most of these abscesses were found in the centre of the temporo-sphenoidal lobe, a trephine opening was made here. The dura looked perfectly healthy, but on aspiration pus was withdrawn. An incision was made, and the abscess evacuated. For a few days after the operation there was a very free discharge of cerebro-spinal fluid. After this there was a large hernia cerebri. In this hernia an abscess formed, and was opened. This hernia was then kept clean and aseptic, but no portion was sliced off, as was often done by surgeons. Gradually the hernia was withdrawn into the brain. When seen last, two or three months ago, the cavity of the ear was perfectly dry. The hemianopsia was still present, but the intelligence of the child had not been in the least affected.

DR. L. E. HOLT said that he had been surprised at the great frequency of middle ear disease in early life, and the great infrequency of cerebral complications. He had under observation chiefly children under four years of age. An examination of the literature of the subject showed only twenty-one cases on record in which there had been brain abscess in such young children. Of these twenty-one, half were due to middle ear disease. In one case coming under his observation, the autopsy showed pus



in the ear, although there never had been any discharge from the ear during life. He had seen two cases of meningitis, and only one of sinus thrombosis. After the age of four years it seemed to him that these diseases were much more common. It was a very common mistake in cases of middle ear disease to obstruct drainage by the insertion of cotton or the insufflation of powders. The chief points in the treatment, it seemed to him, were to keep the ear clean, and improve the child's general condition. The latter was very important, although often overlooked in the effort to treat these cases locally. Frequently the local treatment accomplished but little in the way of stopping the discharge, but a change of air would often bring about a speedy cure.

DR. EMIL GRUENING said that from the statements of Dr. Dench one would infer that any general practitioner, without previous knowledge or experience, could look into the ear and incise the drum membrane with advantage to the patient. It was not so easy a matter, however. A simple meningeal irritation was often simulated by a simple middle ear affection, and all these menacing symptoms would subside promptly on incising the drum membrane. It was proper to insist upon making a free incision into this membrane, and not simply a puncture. Bulging of the membrane did not indicate whether the effusion was pus, blood, or serum, but whenever the membrane was found bulging it was proper to incise it. The case alluded to by Dr. Holt as having pus in the ear at autopsy, and yet no discharge from the ear during life, might be explained by the fact that when meningeal inflammation supervened, the discharge from the ear often ceased.

DR. J. F. MCKERNON said that he desired to heartily endorse what had been said about the necessity for free incision and removal of necrotic bone, in cases of post-aural abscess. He had found a weak solution of formalin very useful for irrigating the ear.

DR. FISKE said that he had assisted Dr. Abbé in a number of operations on cases of sinus thrombosis in adults. The successful cases were the ones in which the jugulars were tied and the thrombosed portions of the sinus irrigated, and thoroughly cleaned out. It seemed to him unnecessarily bold surgery to open the lateral sinus and curette upward and downward. It

seemed to him that the truly surgical treatment of the ear consisted in keeping it clean. As a rule, the general surgeon did not use powders in the ear, because experience showed that they formed crusts and prevented free discharge. He had used for irrigation a saturated solution of boric acid or diluted peroxide of hydrogen solution, and in the later stages solutions of nitrate of silver, of the strength of from two grains to the ounce upward. The results from the use of such solutions had been very satisfactory.

DR. H. W. BERG thought that simple meningitis was so rare in children that it should be looked upon as probably originating in diseases of the ear, until an examination by an expert had shown that this was not the cause. It was rather strange that in the Willard Parker Hospital, where there were many children suffering from scarlet fever and diphtheria, mastoid disease was quite rare. He had thought that this might be due to the method of irrigation employed in that hospital. The ordinary method of irrigating cases of diphtheria in private practice was extremely well calculated to force the discharges from the naso-pharynx into the Eustachian tube. In the hospital, a patient is always placed on its side—never on its back—and the irrigating fluid comes from a fountain syringe raised only slightly above the patient's bed, so as not to give much force. No attempt is made to force the fluid in one nasal fossa and out through the other. Again the fluid is always introduced through the *lower* nostril, and this having been done, the child is turned over on the other side, and the other nostril, which is now the lower one, is similarly irrigated.

DR. DENCH, in closing the discussion, said that he thought it was always well to explore the jugular sinus downward. It was still a mooted point as to whether or not it was better to tie the jugular before exploring the sinus. If firm pressure were made on the anterior border of the sterno mastoid muscle while the sinus was being explored, there should be no necessity for ligation. The latest statistics showed a rather larger proportion of recoveries in the hands of those who did not resort to ligation.

## THE PHILADELPHIA PEDIATRIC SOCIETY.

Meeting of May 11, 1897.

J. P. CROZER GRIFFITH, M.D., PRESIDENT.

DR. HAMILL exhibited a boy six years old with enlargement of the spleen, probably of specific origin.

DR. F. A. PACKARD.—In cases of enlargement of the spleen in the young we always have to think of syphilis. Ball and Fox state that in almost 45 per cent. of cases of inherited syphilis the spleen is enlarged, while about 50 per cent. of enlargement of the spleen is due to syphilis. I do not think the element of rickets can be entirely overlooked.

### MULTIPLE PARALYSES FOLLOWING MEASLES.

DR. S. W. MORTON read a paper upon this subject, in which he reported an illustrative case.

Jos. P—, aet. two years eight months, with family history negative, had been free from any disease until this attack, which presented the characteristic symptoms of measles, and seemed, up to the fifth day, to be a simple but vigorous case. There was then present evident dysphagia, hyperaesthesia, and pain on movement. These all increased for several days, and then gradually subsided, but were not absent until the fifteenth or sixteenth day of the disease, and were then followed by rapidly increasing paralysis and some anæsthesia. The temperature on the fifth day registered 105° F., continued between this and 103° F. until the ninth day, when gradual defervescence began, normal being reached on the seventeenth day. The child swallowed his food slowly and with evident pain. He spoke to no one from the fifth to the twenty-eighth day after disease, at first possibly for fear of pain, later because he found it impossible. The nose and throat were examined repeatedly, but no lesions except acute catarrhal pharyngitis and rhinitis were present. The urine was febrile and showed a trace of albumen, but no casts on the fifteenth day. The mind was clear, with the exception of delirium, when temperature was upwards of 105° F. Medicines used were Tr. Aconite root, Spts. Ætheris nitrate, Neutral mixture, Phenacol.



By the twenty-second day, it was observed that he had not grown in strength, but, as his mother put it, "has grown weaker as he grows better." As he lay upon his couch, his head was found to be on one side or the other, the arms and legs remained where they were placed, and when raised the hands and feet dropped; but he did not cry when handled as he did when feverish. He tried to speak, but could utter only an unintelligible whisper—gave his assent by a nod of the head. When placed in a sitting position his head fell upon his shoulder, and his trunk muscles were too weak to support him.

By the thirty-first day he had grown still weaker. The legs, arms, and neck were wasted; he could flex the knees slightly, and move the hands slowly; the grip was feeble and uncertain. Knee-jerk was abolished. Muscles of arms and legs did not reach to faradic current. The mind was perfectly clear.

At the end of the seventh week he could walk if held under the arms, but could not hold his head erect. Hands and feet still drop when the arms and legs are held out. Grip still quite weak and uncertain. When he walked his feet were lifted high, as is done by an infant beginning to walk. Knee-jerk was still absent. Faradic current produced mild contraction in flexor muscles of legs and arms, but scarcely a tremor in the extensors. In order to fix his vision upon an object requiring him to turn his head, he would make two or three jerky movements of the head. Speech was still slow and indistinct, but few words having been added to his vocabulary. He swallowed his food slowly. He gained power in the arms and legs very slowly, and the speech improved slowly, so that four months after the measles began his condition was as follows: General appearance that of perfect health, but on his feet he was uncertain, often staggering as he ran. Grip still weak and uncertain. Speech but little improved. Patellar reflexes established. All muscles of arms and legs react to faradic current. Could not speak as clearly as his younger brother.

Improvement continued, but was very slow, so that at the expiration of one year he was still weak, unsteady in his gait, and tired much more easily than his little brother. His speech was still very defective. Still could not fix his gaze upon objects requiring a turning of the head without the jerky movement above referred to.

The following facts were noted as unusual: The temperature

did not subside, as is usual with the fading of the eruption; speech was absent from the fifth to the twenty-eighth day; there was hyperæsthesia and muscular soreness, followed by anæsthesia and paralysis, and all these in a case of measles otherwise not violent or apparently complicated.

The possibility of mixed infection was considered. Diphtheria was eliminated by the absence of false membrane and the remoteness and slowness of the albuminuria, also by the time at which the paralysis began.

The elimination of scarlet fever from the case was much more difficult, but its decided improbability was based upon the absence of any variation in the rash, from that of an ordinary attack of measles; the absence of alteration in the character of desquamation; the absence of the strawberry tongue and the presence of only a trace of albumen which would have been, probably, much increased by the presence of scarlet fever. Influenza contamination was thought of, but considered improbable because of the absence of more pronounced catarrhal symptoms and catarrhal complications, *e.g.*, pneumonia. Rheumatic neuritis was considered a plausible complication, and especially because of the frequency of this disease in the child's mother.

The most plausible solution was thought to be that there was in this case a polyneuritis, the result of a poison generated in the system of all cases of measles, but acting in this case upon nerves especially predisposed; for granting this, it became easy to account for the prolonged fever, dysphagia, hyperæsthesia, muscular soreness, anæsthesia, loss of reflexes, paralysis, and loss of power of articular speech.

DR. H. B. ALLYN.—There does not seem to be any doubt that this was a case of multiple neuritis which followed measles. Most of the case of measles in which neuritis, or any form of palsy, has followed, have occurred during convalescence, and most frequently from the latter part of the first to the end of the third week. One feature that strikes me as unusual is the persistent high temperature, which in this case is apparently to be explained by the extreme toxæmia developed by the measles. It is well understood that peripheral neuritis may follow any of the infectious diseases. Cases have been reported following tuberculosis, leprosy, syphilis, and septicæmia, and quite a number of cases have been reported following scarlet fever, smallpox, typhoid fever, pneumonia, and measles.

In a paper on paralysis following measles which I wrote in 1891 there were forty-one cases collected from the literature, and several cases were overlooked. In the majority of these forty-one cases the palsy seemed to be cerebral in origin. Of the cases, however, that were then classed as spinal, I have no doubt that several were certainly cases of peripheral neuritis and not of spinal origin.

DR. A. A. ESHNER.—The failure of speech noted in this case is an interesting symptom which may be explained as a part of the multiple neuritis. This defect seems not to have been aphasic, and it may have been due to an inflammation of the hypoglossal nerve or perhaps of the tongue itself.

DR. J. P. C. GRIFFITH.—Dr. Morton has unwittingly, I am sure, done me a little injustice in stating that this subject is not referred to in any of the text-books of recent date. In the article on measles in Loomis' new system of medicine, I refer to paralysis as a sequel to measles, and I think I refer to Dr. Allyn's paper on the subject.

DR. MORTON.—I remember consulting that work, but was in a hurry when I did so, and perhaps it was because Dr. Griffith speaks of paralysis in general instead of neuritis. I remember that he did mention Dr. Allyn's paper and paralysis following measles, but made no distinct reference to multiple neuritis.

#### A CASE OF GREEN-STICK FRACTURE OF THE INFERIOR MAXILLA.

A case of this character was reported by DR. J. M. BROWN.

DR. E. ROSENTHAL.—I saw with Dr. J. M. Taylor, a very peculiar case in an infant that had fallen on its head and had a depression of the skull. It was probably half an inch in depth when we saw it three or four days after. This depression gave no evidence of compression of the brain, and had slowly receded into the normal contour of the cranium.

#### A CASE OF INFANTILE SCURVY.

DR. D. J. MILTON MILLER reported a case of this character, the full text of which will be found on page 516.

DR. E. E. GRAHAM.—I have listened to the report with great pleasure, and simply wish to corroborate everything the doctor has said, excepting perhaps as to the frequency of these cases. Since the admirable article written a few years ago by Dr. Northrup, many cases of scurvy have been recognized and not found their way into the medical journals. In my children's clinic there are certainly three or four cases of scurvy every year. A



majority of these cases are not as well marked as the one reported by Dr. Miller. These cases are, I think, not uncommonly mistaken for rheumatism or some form of cerebral or spinal disease. I have seen three that were mistaken for either cerebral or spinal lesions, curiously enough in the family of a physician.

DR. ROSENTHAL.—We see quite a number where I practice. Most of our cases have bleeding gums, but do not show other profound symptoms. The people have a method of feeding the children from early life on zwieback, a food similar to toasted sweet bread. Nothing else, not even milk, for a time. After three or four months of this diet the children show signs of scurvy, and later become rickety.

DR. BROWN.—If the child has become old enough to use its feet, one of the first things the mother notices is the refusal of the child to use these members as before. A case of this character occurred in my practice about five years ago in a very well-to-do family. The first anxiety in that instance was due to complaint of the child on standing. This was supposed to be due to a new pair of shoes, and the old shoes were replaced, but still the child refused to stand; next pain about the arm coincident with the bleeding gums. None of this was supposed to be of any importance, until my attention was called to the bleeding of the gums, with suggestion from the mother that she thought the bottle hurt its gum. The child made a good recovery under proper treatment.

DR. CLARA DERCUM.—I reported a case three or four years ago. The child was apparently well, and I vaccinated it. We attributed the fuss that it made about being taken up to the vaccination on the leg. I did not see it for two weeks, when I was sent for, and found a high temperature and the vaccination had not healed. There were swollen gums and a few purpuric spots on the body; pain on lifting the child was marked. It was placed upon dilute sulphuric acid, orange juice, and beef juice, and made a very rapid recovery.

DR. GRIFFITH.—I agree with Dr. Miller about the rarity of this disease in dispensary practice. I have watched for them carefully for a number of years, and have seen but one case, and that is the case reported by Dr. Miller to-night. I believe that there is no one article of food which we can say is the special cause of scurvy. I mean by that, we cannot say that it is necessarily proprietary food or that it is necessarily sterilized milk which produces this disease. The occurrence of scurvy is simply an indication that there is something wrong with the food for *that* child, although it may be the proper food for another child. That is the reason one child thrives upon oatmeal and another develops scurvy; some children get scurvy on sterilized milk; a lot of others, however, do not. Some children get scurvy from proprietary foods, while others escape it.



I might also say in this connection that there is a committee appointed this year by the American Pediatric Society to take up the collective study of infantile scurvy. The Society wishes to send out questions to all who have seen cases for the purpose of studying what are the causes in the production of infantile scurvy, and I shall be glad when the circulars are ready, to send them to any one who will let me know that he or she has had such a case.

DR. MILLER.—I think the point taken by our President is a very good one. It is a food not suited to a particular patient that causes scurvy. I should rather put it that it is the want of a varied diet. We all know that prior to ten years ago condensed milk was an extremely popular food in this city. Dr. Albert H. Smith, who had an enormous practice among well-to-do people, prescribed condensed milk to almost all his patients. Hundreds of babies in this city were brought up on condensed milk, and yet scorbutus was very infrequent. I think the reason scurvy did not develop in the period referred to was because at that time children were put upon a varied diet much earlier. Children now are brought up much more carefully than they were, owing to the teaching of physicians, and particularly to the publication of books on the domestic management of children, and the result is that they are kept upon an unvaried diet until a much later period than they were formerly. I believe among recent writers the only one who denies that food has anything to do with infantile scorbutus is Ashby of Manchester. He contends that scurvy is simply a hemorrhagic diathesis, an exaggeration of the anæmia which occurs in rhachitis and certain dyscrasies of children. I think the fact that scurvy develops in children who do not have rickets or any other dyscrasia, although a great many of them do, and so often follows the use of prepared foods, militates very strongly against this view.

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**Shukowski: Acute Rheumatism in a Nursing Baby Two Months Old.** (*Fahrbuch f. Kinderheilkunde*, B. xlii., H. iii., iv.)

Attention was first called to the child because of the crying when moved in the slightest degree. The temperature was 39.5°. In two days both ankles commenced to swell, the skin being tense and painful. Small petechia appeared on the legs. The meta-tarsal joint of the big toe was the next to become involved. The joints of the index fingers and the knees soon followed. The heart remained normal. The duration of the entire illness was one month.

## Current Literature.

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### SURGERY.

**Power, D'Arcy: Primary Sarcoma in Children.** (*St. Bartholomew's Hospital Records.* Vol. xxxi.)

The author reports the case of a girl aged two years and four months who was admitted to the hospital suffering from primary sarcoma. The child died before operation could be undertaken. He reports twenty-five other cases collected from literature. It appears from a consideration of these cases that primary sarcoma of the vagina is only a specialized form of malignant disease which may affect any or all of those connective tissues which are involved in the complicated developmental process associated with the formation of the cloaca. The sarcoma grows in the connective tissue of the pelvic organs, and extends into the bladder, the urethra, the uterus, or the vagina. It is either well circumscribed, as it was in his own case, or it is diffuse, but whether it is circumscribed or diffuse, whether it affects the vagina alone, or infiltrates all the neighboring organs, this form of sarcoma shows an almost constant tendency to become polypoid and multiple, a characteristic which is well recognized by German pathologists, who have applied the term *racemose sarcoma* to this variety of new growth which affects the female generative organs.

Primary sarcoma as it occurs in children, does not, in the majority of cases, run a very rapid course. It does not ulcerate very readily. It does not usually affect the lymphatic glands. It does not disseminate, but its prognosis is very grave. It recurs quickly after removal, and it kills by interfering with the action of the pelvic organs, by retention of urine more often than by obstruction of the bowels.

The diagnosis is easy, but the polypi are often looked upon as innocent growths, and their true nature remains unrecognized until the presence of a tumor in the pelvis shows that it is too late for surgical interference. Yet this need not be, for multiple polypi of the rectum and of the genito-urinary tract in young people are so rare, and are so often associated with malignant disease, that their presence should always lead to a suspicion of

such a condition. It is insufficient to remove such polypi; it is insufficient even to determine by microscopical examination that some of them are innocent, for it may be that only "a tab" of skin or mucous membrane has been examined.

The complete cure which has been effected in one or two cases of primary sarcoma of the vagina in children shows that the early and complete removal of the growth may be as effectual in this as in other forms of malignant disease. An early and sufficient operation should therefore be advocated in these cases, and the surgeon should not content himself with scraping away the polypoid masses, for Billroth's case shows how rapidly such growths may be reproduced.

**Cotton, John C.: A Renal Sarcoma in an Infant Nine Months Old; Operation; Recovery.** (*Medical and Surgical Reporter.* 1896. Vol. lxxv. No. 20.)

On January 2d, the patient was admitted to the Meadville City Hospital, and on examination a large, slightly movable, solid tumor was found in the right hyperchondrium, the most prominent point of which was located two inches above the umbilicus, and to the right of the mesial line. There was evidently no connection with the stomach or liver, but the attachment to the kidneys was evident. The circumference of the abdomen over the most prominent part measured twenty-five inches. On account of the family history and the rapid growth during the last month, the diagnosis was a malignant tumor of the kidney, probably sarcomatous.

On January 2, 1896, an operation was performed, with every antiseptic precaution. An exploratory incision, two inches in length, was made in a line between the kidney and the prominence referred to, through which the feasibility of extirpation was ascertained. At this stage profound ether narcosis supervened, which proved to be an embarrassing feature throughout the operation. After some delay, and the vigorous use of stimulants hypodermatically, a slight rally took place, when the incision was extended to eight inches, this length being found necessary for the enucleation of the tumor.

The incision was the transverse peritoneal recommended by Abbé. The adhesions were numerous, but most of them were separated by the hand. The growth was extra renal, and developed along the line of the renal vessels, the adnexa being



normal. Although extra renal, the attachments were to the kidney, and the weight of the tumor had dragged the kidney from some of its fatty areolar connections with the spinal column. The enucleation completed, the kidney, with its capsule, were also removed. At the time of writing, eight months after operation, the child was in good health.

## HYGIENE AND THERAPEUTICS.

**Hermay: The Treatment of Melæna in the New-Born.**  
(*Rev. Internat. de Médecine et de Chirurgie.* Vol. vii. No. 22.)

When the hemorrhage is so insignificant as not to affect the general condition of the child, the expectant treatment is indicated. In graver cases three objects are to be accomplished: to act on the skin in order to stimulate its circulation and the nerve centres; to sustain the vital forces by alimentation; and to excite the gastro-intestinal vaso-constrictors. Friction, warm baths and uniform warmth in an incubator or in wadding meet the first object; cold drinks, ice, ergotine and mild astringents answer the last. Bichloride of iron (3-5 drops) or nitrate of silver (.01) may be given alternately with an ergotine mixture, or in very severe cases the ergotine may be used hypodermatically. Finally, should grave anæmia and collapse result from a very severe hemorrhage, oxygen, subcutaneous injections of salt solution or artificial serum, artificial respiration and counter irritation to abdomen or thorax must be resorted to.

**Kraus, E.: Treatment of the Intestinal Diseases of Children.**  
(*Allgemeine Wiener Medizinische Zeitung.* 1896. Vol. xli.)

The author gives detailed histories of twenty-two cases of gastro-intestinal disease, and speaks especially of treatment. Particular stress was laid upon the importance of diet, which was regulated as far as possible. Drug treatment consisted almost entirely in the use of tannigen. On reviewing these cases it appears that in all there was a condition of subacute or chronic intestinal catarrh, and in a few a follicular enteritis. Many of the children were rhachitic. In some of the cases the treatment produced improvement and a cure more rapidly than other medicaments, while in others in which other remedies had failed, it manifested a prompt effect. It never impaired the gastric functions, and produced no disagreeable or injurious after-

effects. As early as the second or third day considerable improvement was frequently noted, which manifested itself in a diminution of the number of stools and change of their character. In pediatric practice tannigen has the advantage of being tasteless, which is of importance in older children with fastidious taste.

To insure positive results, the author insists that a strict regulation of the diet during the administration of the remedy is necessary, yet, while it was not always possible to secure this desirable object, the effect of the remedy appeared, although convalescence was more prolonged. The dose varied from 0.1 to 0.3 gm. four times daily. It is advisable to continue the use of the remedy in diminished doses for a few days after the disappearance of the symptoms, in order to prevent recurrences. Tannigen is a yellowish-gray, odorless and tasteless, slightly hygroscopic powder, soluble in alcohol and dilute solutions of phosphate of sodium, soda, borax, and lime, scarcely soluble in cold water. In milk, which contains phosphates and carbonates in considerable quantity, a portion of the powder is dissolved. The solution has a faintly yellowish color and slightly astringent taste which, however, is scarcely appreciable on addition of milk. After the tannic acid is separated on contact of tannigen with the alkaline intestinal contents, it manifests its characteristic chemical and pharmacological properties, exerting an energetic astringent and anti-catarrhal action upon the mucous membrane of the intestine.

Several high authorities are quoted by the author. Dr. Biedert, of Hagenau, emphasizes the good effects of tannigen in chronic intestinal catarrhs of children, especially the catarrhs of the large intestine, in which the remedy, in combination with irrigation of tannic acid solution, proved very serviceable, and he classes it among the not too numerous reliable medicaments.

Escherich remarks that as soon as, in consequence of an irritation of the mucous membrane, an increased secretion and production of mucus occurs, the intestinal contents assume an alkaline reaction. The tannigen is then decomposed, and acts in a genuine, elective manner upon those places at which the most marked secretion occurs, and which, therefore, present the most marked lesions of a disease. The parts chiefly connected with the secretion of mucus, especially the glands of Lieberkuhn, in the lower portion of the intestine, react in an almost

specific manner upon tannigen. By diminishing the excessive mucus secretion, not only is the existing irritation of the mucous membrane and the true cause of the disease combatted and removed, but the loss of the body in nitrogenous elements, and the increased peristalsis connected therewith are diminished, and a greater absorption of nutritive elements and water in the large intestine brought about. Aside from this, Escherich ascribes to the drug a disinfectant and bactericidal effect. He says that all of these valuable properties combine to produce the excellent results which have been reported from the application of tannigen in subacute and chronic intestinal catarrhs of children. He was able on the ground of observations collected during a period of more than a year, to confirm them in all particulars.

**Watson, W. T.: The Treatment of Laryngeal Diphtheria.** (*Maryland Medical Journal.* 1897. Vol. xxxvi. No. 14.)

The author reports seventeen cases of croup with three deaths, a mortality of 17.6 per cent. All but one were treated with antitoxin. Of the three fatal cases, one died within three hours after receiving antitoxin, and the other within twenty-one hours.

**Chavessant: The Absorption of Iron in the Intestines, and its Relation to the Blood.** (*New York Medical Journal.* 1897. Vol. lxx. No. 10.)

In the *Presse Médicale* the author states that M. Cloetta has made some experiments in regard to the elimination of iron in the economy. For this purpose he used ferratin, which exercises no caustic action on the tissues. His experiments demonstrated that, in dogs which were subjected to a milk diet, the iron injected into the veins in the form of ferratin was eliminated by the large intestine. Quincke had also ascertained this by micro-chemical examination. The author also investigated the means of assimilation of this element when administered by the digestive tract, and he found that twenty per cent. of a dose of ferratin introduced into the stomach of a dog subjected to a milk diet, was absorbed.

According to M. Cloetta, the organic combination of iron with albuminoid matter is necessary in order to insure its absorption. For instance, two dogs were experimented upon as follows: Their food consisted of a soup made of starch, sugar, glucose, and distilled water. To the nourishment of the first dog a solution of iron chloride representing sixty milligrammes



of iron was added; to that of the second dog, a solution of ferratin representing forty milligrammes of iron. The villusities of the dog to which ferratin had been given presented the characteristic action of the iron absorbed. The iron contained in the intestine of the other dog was not absorbed, and formed masses at the base of the villusities. The organic iron combined with albuminoids is evidently absorbed in the intestine, penetrates the chyle, and enters the circulation by the mesenteric veins.

Experiments made by Cloetta with new-born dogs demonstrated that the presence of iron salts in the food was not immaterial to the formation of hemoglobin, that there was no absorption of iron salts, and that the liver seemed to regulate absorption in the same way as it did glycogenesis.

**Fox, L. Webster :** *Treatment of Ophthalmia Neonatorum.* (*Medical Council.* 1897. No. 2.)

The first evidence of the disease is a tear drop in the inner canthus of the affected eye. Usually but one eye is affected at a time. This glairy fluid, for it is not a natural secretion, if examined closely is very much like mucilage of gum arabic, and appears during the first twenty-four hours. At this time nitrate of silver solution, five grains to the ounce, should be applied to the everted eyelids once daily. At the end of the second day this sticky fluid has changed its consistency and appearance, and it has become muco-purulent.

When the disease has developed, the best treatment is the application of a five-grain solution of silver to the conjunctiva of the lids, and this followed during the day with sublimate solution of 1 to 5000. Whenever pus makes its appearance let it be wiped away from between the lids with a pellet of absorbent cotton saturated with the sublimate solution. The edges of the lids may be anointed with ointment of yellow oxide of mercury, an eighth of a grain to the dram, to which has also been added corrosive sublimate, grain 1 to 3000.

If the flow of pus is not lessened by this treatment, it may be checked by applying diluted (one-half) peroxide of hydrogen. It is important to irrigate the cul-de-sac up and about the retro-tarsal fold, which is best done with a hydrostatic eye douche. In this stage, after there has been a discharge of pus for four or five days, and, owing to the tumefaction of the eyelids, which has caused a disturbance of the circulation and nourishment of

the cornea, a haziness appears, then apply a solution of eserine sulph., grain one-fourth to dram, in addition to the treatment already inaugurated.

In the second stage, when the conjunctiva is thick and velvety, apply a stronger silver solution. One may even scarify the conjunctiva, and apply the sulpho-carbolate of zinc lotion. In the third stage apply the silver solution (5 grains to 1 ounce) once daily, and bathe frequently. By following out Crede's method in the beginning, and this line of treatment, blindness from this disease will be lessened to almost nothing. In the absence of nitrate of silver any astringent wash is better than nothing; alum, always on hand, will be of some value, and in the absence of any astringent, plenty of water with a pinch of soda bicarb., to dilute the pus and wash away the micrococci, is of some value.

**Krauss, Wm.:** *The Treatment of Anæmias.* (*Memphis Med. Monthly.* 1897. No. 3.)

The evolution of organic iron compounds has been interesting, both from pharmaceutical and clinical standpoints. The scale salts were the first to attract attention, and their superiority over the inorganic preparations soon became manifest. The hydrated succinate then came into favor, and later the "albuminates" were introduced—indefinite mixtures, whose solutions readily coagulated, even spontaneously. In peptonate of iron and manganese we have a stable and palatable preparation, uniform in composition and therapeutic in effect. Theoretically it would seem that iron could only be of service in chlorosis; clinically this rule does not hold good. The author has used peptomangan Gude some five years with good results, and reports several cases.

A patient was almost exsanguinated by hemorrhage, and delirious. Hemorrhage was stopped by curetting. She rallied without transfusion. Next morning was very weak; no blood-examination was permitted. She was put upon pepto-mangan, a tablespoonful three times a day, milk, and beef tea. At the end of a month the blood count was 4,800,000, hemoglobin 70 per cent. Although she felt entirely well, the treatment was continued.

In another case, following hemorrhage, the blood count was 3,200,000; hemoglobin not estimated. She received the same

nourishing diet as before, and pepto-mangan. At the end of five weeks her blood contained 4,300,000 red cells to the cubic millimeter. She was able to be up, had a fair appetite, and was gaining daily. No subsequent count could be made, but she looked better than for a year past.

In a case of nervous breakdown which had been treated unsuccessfully for two years, the morphine habit being also present, the red disks were 2,800,000, hemoglobin 40 per cent. Treatment: Pepto-mangan (tablespoonful three times a day), strychnine hypodermically, and phosphide zinc. After seven weeks she was able to take short walks, and had gained eighteen pounds. The hemoglobin percentage was 65.

Another case was treated for opium habit. He had hot and cold flashes, insomnia, and was very nervous. Red cells 2,320,000, some microcytes and platelets; hemoglobin 45 per cent. He took pepto-mangan, and four weeks later wrote that he was feeling better than for years, and had gained flesh steadily.

A girl, aged nineteen, with chlorosis, showed red cells 4,160,000, hemoglobin 40 per cent. Pepto-mangan was taken seven and a half weeks. Result: Red cells 4,720,000, hemoglobin 90 per cent.; great subjective improvement.

One case of chronic gastritis, with hypochlorhydria complicating malaria; one of hysteria (male, aged nineteen), three cases convalescent from opium treatment, two of senile debility, two of chronic nephritis, and one of tuberculosis, are also reported as doing well on the same treatment.

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## MEDICINE.

**Demetriades: The Effect of Water on the Diphtheria Bacillus.** (*Archives f. Kinderheilkunde*, B. xx., H. v., vi.)

The investigations were instituted with the object of determining the vitality of the Klebs-Löffler bacillus in water. Water was used as follows:

First, Sterilized distilled water.

Second, Sterilized spring water.

Third, Spring water not sterilized.

The bacilli culture of known strength was mixed with a few cubic centimetres of distilled water. This mixture was then divided into three parts, one with sixty ccm. of sterilized dis-



tilled water, one part with an equal quantity of distilled spring water, and one part with plain spring water.

The sterilized distilled water showed after seven days but few colonies, and after twenty-one days not a living Klebs-Löffler bacilli could be found. The results with the sterilized spring water were practically the same, with the exception that thirty-one days were required to pass before all the bacilli were dead.

In the plain spring water the disappearance of the bacilli was most rapid. None were found after the ninth day.

The experiments showed that the bacilli lost their virulence very rapidly while in the water, but they as rapidly regained their virulence when placed in favorable medium.

The author feels convinced that water may readily act as a carrier of the disease.

**Burr, Charles W.: The Blood in Chorea.** (*University Medical Magazine.* 1896. Vol. ix. No. 3.)

This paper is based upon examinations of the blood made in thirty-six cases of chorea. After analyzing the evidence presented, the author draws the following conclusions:

The blood is rarely absolutely normal in amount of coloring matter and number of red corpuscles during an attack of chorea. There is usually a moderate diminution in the hemoglobin and a relatively still smaller decrease in the number of red corpuscles. The anæmia is, therefore, chlorotic in type. There is no relation between the severity of the chorea and the severity of the anæmia. When the anæmia is severe there is usually some complication competent to explain it. All things considered, we feel justified in believing that anæmia is not an immediate, direct, exciting cause of chorea, and but infrequently a predisposing cause. In the great mass of choreas with very moderate anæmia it most probably is a result of the chorea, a secondary condition. As to the mechanism of its production we know no more than we do of the method of action of other profound functional nervous disturbances, for example, emotional shock in reducing the blood count—namely, nothing. In the cases caused by bacterial poisoning, which so far have not been proven to be numerous, it is possible that the anæmia is toxic.

There is one form of anæmia the existence of which cannot be shown by any means at present at clinical command—namely,

the condition in which there is an equal decrease in all the elements of the blood, solid and liquid, a quantitative anæmia. This may exist and be the cause of some cases of chorea, but it is not susceptible of proof. Against the probability of such causation is the fact that hemorrhage due, for example, to trauma (which, of course, causes a temporary quantitative anæmia), is not followed by chorea, and the improbability that a quantitative anæmia due to congenital or internal causes would be cured by rest in bed for a few weeks, regulation of diet and the administration of a small amount of arsenic, a method of treatment of chorea which so often is followed by recovery.

**Guida: A Tetanoid State of Infectious Origin in the New-born.** (*La Pediatria, American Journal of Medical Sciences.* 1896. Vol. cxii. No. 6.)

The author states that, apart from true tetanus following umbilical infection, he has observed in new-born infants certain tetanoid phenomena likewise due to infection of the umbilical wound, but so little marked as to pass easily unperceived, at least at the beginning, unless the existence of this morbid state be borne in mind. In the first three or four days these early symptoms appear. At certain times the child does not take the breast, or, having taken it, does not suck, and remains completely motionless. On examining carefully and repeatedly, it is observed that sometimes the child becomes suddenly cyanosed, then flushed, and finally very pale; the respiration is arrested or is very superficial, the pulse is filiform, the limbs are cold; a little foam appears on the lips, the jaws are fixed, the whole body rigid, and at times some muscular contractions, but no true convulsions. This state, which is not without analogy to eclampsia, lasts for from five to fifteen minutes, then subsides; several recurrences of this sort may take place during the day.

In the three cases that he has observed, Guida obtained a rapid cure by means of a careful disinfection of the umbilical wound and by aromatic baths at 95° F. to lessen muscular rigidity and favor the elimination of toxic products. In one case profound prostration followed the more active manifestations of the disease, but was readily combated by small doses of brandy given in a teaspoonful of the mother's milk.

**Ghika: Pseudo-Membranous Angina and Laryngitis due to Streptococci.** (*Jour. de Clin. et de Thér. Infantiles.* Vol. iv. No. 25.)

A little girl of seven years, ill five days, developed a croupy cough and dyspnœa, so urgent as to demand immediate intubation. There were patches of pseudo-membrane upon the tonsils and pharyngeal wall, with slight submaxillary adenopathy, and marked tracheo-bronchitis. One injection of Roux's serum was given. The purulent secretion from the bronchi was so profuse that evacuation through the tube became insufficient, and tracheotomy was performed. Bacteriological examination of the membrane showed the presence of streptococci only, and the fact that the process spread into the larynx is, therefore, the more remarkable. Recovery was complete within two weeks.

The author believes that under certain circumstances, especially in older children, tracheotomy should be employed in preference to intubation.

**Comby: Acute Gastro-Intestinal Septicæmia in Childhood.** (*Médecine Moderne; American Journal of the Medical Sciences.* 1897. Vol. cxiii. No. 3.)

The author calls attention to the existence among children, from four to eight years of age, of a form of gastro-enteritis which has exactly the course and gravity of a cholera infantum. It follows sometimes the ingestion of food bad in quality or improper for the age of the child, sometimes without known cause. It begins as a febrile indigestion, but suddenly diarrhœa begins, vomiting becomes uncontrollable, the facies of cholera appears, and the child dies in three or four days. Fever may be wanting from the beginning. The knowledge of this condition is important, for with children of this age the gravity of the condition may not be suspected at the beginning; and even the most energetic treatment, with lavage of the stomach and intestines, injection of artificial serum, etc., may utterly fail.



# American Medical Association.

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## SECTION ON PEDIATRICS.

Philadelphia, June 1, 2, 3, and 4, 1897.

*President,*

J. A. LARRABEE, M.D., Louisville, Ky.

*Secretary,*

HENRY E. TULEY, M.D., Louisville, Ky.

*Executive Committee,*

W. S. CHRISTOPHER, M.D., Chicago, Ill. ;

EDWARD H. SMALL, M.D., Pittsburgh, Pa. ;

A. C. COTTON, M.D., Chicago, Ill.

The meeting was opened at the appointed time by the Chairman, who delivered a most excellent annual address. He entered largely into the history of the Section, describing its organization and giving a list of the officers, together with a description of the work done at each meeting. He referred to the reasons for establishing pediatrics as a specialty, which were not so well appreciated seventeen years ago, as now. He gave a brief but discriminating review of the present tendency of pediatric literature and deprecated the tendency to the publication of articles compiled without due thought and examination as to facts. He also reviewed the progress made in pediatric therapeutics, and referred to the changes which have occurred during recent years, the conclusion being reached that serum therapy has become so well established as to constitute a necessary part of the physician's armamentarium. The address was closed with a plea for the more general teaching of physiology and hygiene in the schools, and a reference to the necessity of higher moral education of the young.

The first session was devoted to a discussion on antitoxin. Eight papers were announced on this subject, a part of which

were read by title. A considerable number of new cases were reported and some new statistics were presented. It may be fairly said that the consensus of opinion was almost wholly in favor of the antitoxin treatment, the strongest paper against the treatment being based upon an experience of six cases. A notable feature of the session was a paper by Prof. Klebs, read by his son, on the method of action of antitoxin. The antitoxin discussion was, on the whole, very satisfactory, as it was marked by perfect good feeling and by the absence of extreme views upon either side, which have marred many discussions upon that subject.

The second session was interfered with by attractions in the general meeting, which necessitated its adjournment. This so disarranged the programme of the following two sessions, as to render it necessary to read some important papers by title.

The early part of the third session was occupied by two papers on congenital deformities, and by three papers on meningitis, all of which were of a high order of merit. The paper by Dr. Daniel, of New York, on "Tubercular Meningitis," was a very important contribution to medicine, while the paper on "Meningitis as a Complication to Measles," by Dr. Harvey, of New Jersey, reviewed most thoroughly a very unusual condition. The paper by Dr. Davis, of New York, on "Eye Symptoms in Meningitis," was also worthy of special attention.

The latter part of the session was devoted to infant feeding. The discussion was very animated and of great practical value. The stated papers upon this subject were those by Dr. Cotton, of Illinois, on "Infant Feeding;" and Dr. Kerley, of New York, on "Condensed Milk as a Food for Infants." The discussion was participated in by Drs. Griffith, Christopher, Rotch, Kelley, Rosenthal, Byers, and Larrabee. The consensus of opinion was strongly in favor of the use of cow's milk in the feeding of infants, and in the use of exact percentages. The discussion by Dr. Rotch, in this connection, was particularly worthy of note.

The fourth session was distinguished by two papers of unusual merit. The first by Dr. Coley, of New York, on the "Treatment of Hernia in Infancy and Childhood," was based on a vast number of cases of hernia, treated during the past six years in the Hospital for Ruptured and Crippled in New York. The interest of the paper was increased by the discussion by Drs. Rodman, of Kentucky, and De Garmo, of New York. The second

important paper was that of Dr. Bedford Brown, of Virginia, on the "Resuscitation of Still-Born and Feeble-Born Children." The method advocated was that of hypodermic injection of whiskey and belladonna into each arm, with the continuous application of dry heat. The results of this treatment, in the writer's experience, have been far more prompt and satisfactory than those of the ordinary mechanical methods.

The fifth session was devoted to the very important subjects of the influence of schools and overpressure upon children, to home training, and to hygiene. The last session was devoted to tuberculosis in its various manifestations, and to several minor subjects in the hygiene and management of infancy.

The programme was by common consent the most extensive, and the meeting the most successful in the history of the Section. This was due partly, no doubt, to the place of meeting and the occasion, but chiefly to the energy of the Chairman and Secretary. The following officers were elected for the ensuing year: Chairman, Dr. J. P. Crozer Griffith; Secretary, Dr. Edwin Rosenthal, both of Philadelphia.



# ARCHIVES OF PEDIATRICS.

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[No. 8.]

## Original Communications.

### LITHÆMIA.

BY B. K. RACHFORD, M.D.,

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Lithæmia\* (Stone, λίθος; Blood, αἷμα). Lithæmia is a term introduced by Murchison to designate a large group of symptoms which he thought to be due to an excess of uric (lithic) acid in the blood. The term uricæmia had previously been used by the elder Flint for the same purpose, and under the term lithuria a number of recent writers have grouped the same set of symptoms. Concealed gout and American gout have also been very largely used in naming these same clinical manifestations. The writer has contributed a number of papers on this same subject under the title, "Leucomaïne Poisoning." All of these terms have come into general use, and all of them are more or less inaccurate. The term lithæmia has been selected, not because of its propriety, but rather because of its long and widespread use by medical writers. Lithæmia comprehends all of the manifestations resulting from the presence of the alloxuric bodies in the body media. Uric or lithic acid is one of these alloxuric bodies. It may, in fact, be considered as the representative body of its class, even though it plays a comparatively insignificant rôle in producing the symptoms of lithæmia. Under this definition of lithæmia, its pathology will comprehend all that is known of the formation, physiological action and pathological significance of all the bodies of this class.

### PATHOLOGY.

The alloxuric bodies are divided into three groups, namely, the hypoxanthin group, the xanthin group and the uric acid group. The hypoxanthin group, embraces adenin ( $C_5H_5N_5$ ) and

\* In the preparation of these papers I am much indebted to Vaughan and Novy's book on Ptomaines and Leucomaïnes and to the American Text-Book of Physiology.

hypoxanthin ( $C_5H_4N_4O$ ). Both of these bases may be formed by the decomposition of certain nucleins and may be obtained, therefore, from certain tissues rich in nucleated cells. They are thought to be formed in the body by a retrograde metabolism of the nuclei of these cells. These bases have been found in excess in the urine of leucocythæmic patients, and their presence in this condition is explained by the great excess in the blood of nucleated white blood corpuscles and the consequent destruction of nuclein. Kossel has shown that in the breaking down of certain nucleins, adenin is formed, and hypoxanthin follows as an oxidation product of adenin. It is, moreover, significant that the hypoxanthin thus formed may, if the conditions are favorable, be yet further oxidized into uric acid. Uric acid may therefore be an end product resulting from the oxidation of the hypoxanthin group. It is not, however, probable that this nuclein catabolism is the only manner in which the hypoxanthin group is formed in the body. In truth it is probable that this group may also be formed as simple transition products in the conversion of albumen into uric acid and urea. This is made probable by the fact that the muscle contains a quantity of free hypoxanthin and xanthin, which evidently bear no relation to the nuclein metabolism above referred to. The hypoxanthin group are non-poisonous, or so slightly so that apart from their action as muscle stimulants they may be considered as physiologically inert. It is quite improbable, therefore, that they have anything to do with the toxic symptoms of the uric acid diathesis, but they are not without importance as furnishing a source of uric acid formation.

The xanthin group includes guanin ( $C_5H_5N_5O$ ), xanthin ( $C_5H_4N_4O_2$ ), paraxanthin ( $C_7H_8N_4O_2$ ) and heteroxanthin ( $C_6H_6N_4O_2$ ). The guanin and xanthin of this group are very closely related; in fact the xanthin is a derivative or oxidation product of guanin and bears the same relation to it that hypoxanthin does to adenin, and moreover the guanin, like adenin, may be a nuclein derivative. Guanin may be formed from the disintegration of certain nucleins and xanthin and uric acid may follow as oxidation products. When guanin is formed in the body it is rapidly converted into xanthin and uric acid, and this conversion is so rapid and complete that it is never found in urine. Xanthin, however, is found in minute quantities in normal urine, and is not uncommonly found in great excess in pathological

urine. In leucocythæmic urine, for example, it occurs in great excess as a result of the increased nuclein metabolism above referred to. In the breaking up of certain nucleins it may be noted that adenin is oxidized into hypoxanthin and guanin into xanthin, and that both of these products may be yet further changed into uric acid. In certain pathological conditions this is no inconsiderable source of uric acid formation. The experiments of Boudzynski and Gottlieb have proven that the alloxuric bases, including uric acid, may be quadrupled in leucocythæmic urine, and they have also demonstrated that the excess of uric acid in this urine is in great part due to the oxidation of the xanthin compounds which have their origin in the breaking down of the nuclein of white blood corpuscles. It is probable that the nuclein of these corpuscles is catabolized into uric acid as shown in the following diagram:

	<u>Nuclein.</u>	
	:	
	:	
Proteid.	<hr/>	
	Nucleic Acid.	
	:	
	:	
	<hr/>	
	:	:
Phosphoric Acid.	Adenin.	Guanin.
	:	:
	Hypoxanthin.	Xanthin.
	:	:
	Uric Acid.	Uric Acid.

As previously said, it is probable that nuclein catabolism is only one of the sources of the xanthin compounds and that xanthin, as well as hypoxanthin, may occur as one of the intermediate products of proteid metabolism.

Guanin is non-poisonous and cannot therefore enter as a factor in producing the toxic symptoms of lithæmia, and it is moreover oxidized into xanthin as rapidly as it is formed. Xanthin itself is only slightly toxic, producing, according to Filehne, muscular rigor and paralysis of the spinal cord in the frog. The slight toxic action and rapid oxidation of xanthin into uric acid make it improbable that xanthin has much to do with the toxic symptoms of lithæmia. But its importance depends, not only upon its own slight toxicity, but also upon the fact that it is an antecedent of non-toxic and slightly soluble



uric acid, which plays, as we shall see, a rôle in the pathology of the uric acid diathesis (lithæmia). Special note may here be made of the fact that paraxanthin and heteroxanthin have not been found among the decomposition products of those nucleins from which the other xanthin bodies are formed, and that we have as yet no positive evidence that they are intermediate bodies in the catabolism of nuclein into uric acid. In this connection it is significant that these bodies have not been found in the blood or urine of leucocythæmic patients.

Paraxanthin and heteroxanthin may be found in minute quantities in normal urine. From 10,000 litres of urine Kruger and Salomon separated 13 grammes of xanthin, 12.5 grammes of paraxanthin, and 7.5 grammes of heteroxanthin. That these bodies occur in normal urine is ample evidence that they may occur in normal blood in very minute quantities, but as yet we have no exact evidence of the antecedents of either paraxanthin or heteroxanthin. It is however probable that they are formed by cellular catabolism—that is to say by the breaking down of certain nucleins in the body, but as yet we have no experimental evidence to point out the cells or tissues of the body which furnish the nuclein from which these bodies are formed. In the present stage of our knowledge further speculation along this line is idle. Neither do we know whether or not these bodies are ever oxidized into uric acid in the body. That they may be is quite probable, but we have no evidence to justify the assertion that such is the case. We know that paraxanthin and xanthin may occur in great excess in the urine in certain pathological conditions without a corresponding excess of uric acid, and that an excess of uric acid in the urine does not always signify an excess of these xanthin bodies. This would indicate that paraxanthin and heteroxanthin may be formed by a body chemistry somewhat different from that which produces uric acid and the other xanthin bodies. It may be of interest also to note that paraxanthin and heteroxanthin, although closely related and commonly occurring in excess in the same urine, do not always do so. An excess of paraxanthin does not always mean a corresponding excess of heteroxanthin. In dogs heteroxanthin may occur unaccompanied by paraxanthin, and in normal human urine paraxanthin commonly occurs in minute quantities not accompanied by heteroxanthin. Yet paraxanthin and heteroxanthin are commonly associated in excess in many

pathological urines, such for example as the urines excreted by patients suffering from the nervous paroxysms of lithæmia. It is my belief, therefore, that their importance in the pathology of this condition demands for them special consideration.

Paraxanthin is by far the most poisonous of the alloxuric bodies. Its physiological action has been studied by Salomon, who observed that it produced dyspnœa and a rigor mortis like contraction of muscles, followed in the mouse and guinea pig by convulsions and death. In the mouse these symptoms were preceded by extreme reflex excitability.

I have myself repeatedly observed the following group of symptoms in mice and guinea pigs as a result of experimental paraxanthin poisoning: (1) Increased reflex excitability, which gradually increases until convulsive movements begin (in the mouse). (2) Dyspnœa, which continues to death. (3) Contraction of pupils and nystagmus (in the guinea pig). (4) Spasm of the diaphragm, which may result in asphyxia. (5) Spasm of muscles of jaw and frothing in the mouth. (6) General violent convulsive movements. The muscular spasm is first tonic and then clonic. The animal may die in convulsions. (7) Incontinence of urine not uncommonly occurring before the convulsive movements begin. (8) Prolonged narcotism, following the convulsions if less than a toxic dose be given.

As above noted, we have no exact knowledge of the antecedents of paraxanthin in the body. We do not know how it is formed, where it is formed, nor from what it is formed. It is thought to be formed by the catabolism of the cellular proteids, notwithstanding there is no experimental evidence upon which to base this proof. It is moreover, thought to be capable of oxidation into uric acid, although there is no proof that paraxanthin in the body is ever destroyed or uric acid ever formed in this way. In studying the causes which lead to the formation of paraxanthin in the body, the influence of the menstrual function and of the thyroid secretion demand special notice. I have repeatedly observed that the menstrual function is closely associated or coincident with the sudden appearance of a great excess of paraxanthin in the blood and urine of lithæmic patients, but the way in which the menstrual period produces this result is by no means clear. I have also observed that thyroid feeding of lithæmic patients may result in the sudden appearance in the blood and urine of an excess of paraxan-

thin and other xanthin bodies and might also produce at the same time a severe headache, resembling migraine or an acute exacerbation of a chronic arthritis. That thyroid feeding may produce lithæmic symptoms accompanied or followed by an excessive excretion of paraxanthin and other xanthin bodies, is very suggestive that the hyperactivity of the thyroid gland may be an etiological factor in the production of the nervous symptoms of lithæmia, and this inference from experimental physiology, is somewhat supported by the fact that lithæmic symptoms occur most commonly during the period of life that the thyroid is most active, and not infrequently disappear about the time the thyroid commences to atrophy. Another suggestive fact in this connection is that lithæmic symptoms are, as above indicated, always exaggerated at or near the menstrual period, and that this period is coincident not infrequently with an enlargement and hyperactivity of the thyroid gland. One may infer from these facts that the thyroid gland has something to do with influencing the body chemistry, which results in the formation of these poisonous uric acid leucomaines and the consequent production of lithæmia. But it should be remembered that the acceptance of this proposition does not preclude the idea that other glands and other organs in the body may have as much, or more, to do with the formation of these bodies as the thyroid gland. We know, at least, that the presence of the thyroid gland is not necessary to the formation of the poisonous xanthin bodies and the consequent lithæmia, since this condition not uncommonly occurs after atrophy of the thyroid gland.

It may also be noted that the alkalinity of the blood may favor the solution of paraxanthin just as it does uric acid and the other alloxuric bodies, and that therefore the quantity of paraxanthin in the blood and urine may vary with the alkalinity of the blood.

For reasons given above, it is more than probable that paraxanthin is an important factor in the production of those *lithæmic paroxysms which are accompanied with an excessive amount of this poison in the blood and urine*.

Heteroxanthin is also poisonous, and produces, according to Kruger and Salomon, the same group of symptoms as paraxanthin. But while the physiologic action of these bases are similar, it requires three times as much heteroxanthin to produce the



same degree of toxicity. Heteroxanthin is also much less soluble than paraxanthin and is, as a rule, found in smaller quantities in lithæmic urine. For these reasons heteroxanthin is not as important a factor as paraxanthin, but its influence is nevertheless not to be overlooked in a study of the etiology of this condition.

Uric acid ( $C_5H_4N_4O_3$ ) is the end product of proteid metabolism in birds and reptiles. In these creatures it is believed that the proteid metabolism results in the formation of ammonium lactate, which in the liver is synthetically combined to make uric acid. This uric acid combines with potash, soda and ammonia to form urates, and as such constitutes the renal excretion of birds and serpents. In man and mammals urea is the end product of proteid metabolism. The chemistry by which the proteid molecule is converted into urea is not fully understood, but it is an established fact that after a time carbamate of ammonia is formed, and that from this salt the liver manufactures urea and the urea is excreted by the kidney as such. In a few of the carnivora, urea is almost the sole end product of proteid metabolism, but the urine of man constantly contains a small quantity of uric acid in addition to the large quantity of urea it contains. Roberts believes that "the presence of uric acid in the mammal's urine should be regarded as a memory of some ancestral form which eliminated its nitrogen as uric acid." That uric acid may be a "vestigial remnant" is testified to by the fact that it is most abundant in the urine of the infant during the first few days of life. That uric acid very commonly occurs in excess in the urine of newly-born infants is a fact, the clinical importance of which has been much dwelt upon by Jacobi. But it is also a fact that all infants do not have a like excess of uric acid in their urine. Its presence therefore in excess in infantile urine may be a "vestigial remnant" from the foetal condition, which mimics the evolution changes that substituted the urea of mammals for the uric acid of reptiles. It is probable, therefore, that uric acid may be, especially in the first days of life, an end product of proteid metabolism and that the liver may play the important part of presiding over the final stages of this metabolism by which the ammonia compounds are converted into uric acid and urea. It is evident that uric acid formed in this way may be increased by a number of causes.

In the first place, individuals may inherit this tendency to ex-

cessive uric acid formation from lithæmic ancestors. And it is not improbable that this inheritance may consist in the immaturity or late development of the body functions which control proteid metabolism. This will explain how these lithæmic children may outgrow this uric acid tendency, and it will also explain why simple food, pure air, and abundant exercise will greatly assist these children in the development of body functions which will give a maximum amount of urea and a minimum amount of uric acid as the end products of proteid metabolism. It is of equal importance to remember that the reversion to the uric acid type may result from improper food, impure air and little exercise, in these individuals who have inherited a tendency to form uric acid as the end product of proteid metabolism.

In the second place, the amount of uric acid may be increased by a diet of nitrogenous food. The more proteid food the body is called upon to metabolize, the more uric acid and urea are formed. An excessive in-take of proteid food may therefore be an important source of uric acid formation. This source of uric acid formation is especially active in those who have inherited the inability to satisfactorily convert the proteid molecule into the maximum amount of urea and the minimum amount of uric acid. In such individuals with lithæmic inheritance a great excess of uric acid is formed. The excess of urea formed matters little as it is very soluble and is readily excreted. But the excess of uric acid is difficult to get rid of, because it is excreted as urates which are very slightly soluble in blood and urine; an excess, therefore, of these bodies may result in the precipitation of biurates into the tissues, producing the uratic deposits which occur in gout, or in the precipitation into the urinary passages of free uric acid, producing uric acid infarcts and calculi.

In the third place, uric acid may also be formed from the breaking down of nuclein, as noted above in speaking of the formation of certain of the xanthin bodies from this same catabolism. It is believed by some observers that this is the most important source of uric acid formation in mammals. It is not improbable that a small quantity of hypoxanthin, xanthin and uric acid may be formed by the daily normal catabolism of nuclein, and that these bodies are formed in excess in pathological conditions which increase this nuclein catabolism.

This disintegration of nuclein would follow cell destruction, and one might therefore expect to find an increase of the above-

named xanthin bodies and uric acid in all diseases accompanied by an increased destruction of nucleated cells. This is held to be the explanation of the excess of uric acid, hypoxanthin and xanthin that is found in leucocythæmia, pneumonia, and the acute fevers. Here again let me note that paraxanthin and heteroxanthin have not been shown to be formed by the catabolism of nuclein, neither are they found in excess in the urine of leucocythæmic or acute fever patients. I may further add that there is no evidence at hand by which we may estimate the rôle which the catabolism of nuclein plays in the pathology of lithæmia. It is not improbable that it may be one source from which comes the excessive formation of uric acid in lithæmic conditions, but as yet the exact evidence is wanting of the relative importance of this source of uric acid formation as compared with the other sources above named.

Uric acid and its compounds are *physiologically inert*. This is a fact of great importance in estimating the rôle which the various alloxuric bodies play in producing lithæmia. Uric acid and its compounds are non-toxic. This fact has been abundantly proven by physiological experiments and there is not the slightest experimental evidence to the contrary. Bouchard\* injected experimentally into the blood 30 centigrammes of uric acid for each kilogramme of the animal, without accident. In one instance he injected 64 centigrammes for each kilogramme without injury to the animal. When death did occur following excessive quantities of uric acid, he was convinced by his observation that death was due to the excessive quantity of the vehicle (water). Sir William Roberts says† concerning the theory that uric acid is toxic, "There is first the complete absence of direct experimental proof. Animals have been made to ingest large quantities of uric acid with their food, and urates in solution have been freely injected into their veins without eliciting any sign of poisoning.

"In the next place, the idea that uric acid is poisonous seems opposed to broad biological analogies. Uric acid is the physiological homologue of urea; each of these bodies constitutes, in its separate domain, the final domain of nitrogenous metabolism. It cannot be said, without an abuse of terms, that urea is a poisonous substance; and it would be strange if its homologue,

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\* Auto-Intoxication in Disease.

† Cronian Lectures, 1892, p. 112.



uric acid, differed from it in so important a particular as the possession of toxic properties.

“The theory appears not less improbable when examined from a nearer point of view. The system of the gouty man is at times surcharged with uric acid. On the eve of an outbreak the fluids of the body, in parts at least, must be impregnated with biurates to saturation; for, of course, no precipitation can occur until this point is reached. Yet, with fluids thus saturated with urates, such persons often betray not the slightest sign of poisoning, and enjoy complete immunity from symptoms of every kind, until overtaken, unwarned, by the sudden precipitation which provokes the arthritic attack.

“Again, the manifestations of irregular gout (*lithæmia*) are so extremely diverse in seat and character that it is hard to believe that they can be produced by one and the same toxic agent.”

The fallacy that uric acid is toxic, that it is capable by its presence in the blood of producing the most profound nervous symptoms, has taken such deep root in the medical mind that it will take a generation to dislodge it, despite the fact that there is abundant experimental evidence that it is physiologically inert, and that the belief in its toxicity rests solely on a theory which has been proven to be fallacious. Uric acid and its compounds being physiologically inert, should no longer be charged with producing the toxic symptoms of *lithæmia*. But it is easy to understand why uric acid has been indicted and convicted for an offense which it never committed, since it is found in close companionship with the real offenders, namely, paraxanthin and heteroxanthin. We shall presently see that paraxanthin and heteroxanthin are the most important factors in producing the toxic symptoms of *lithæmia*, and we may here note that an excess of uric acid very commonly accompanies an excess of paraxanthin and heteroxanthin in the blood of lithæmic patients. These conditions have made it possible for the real offenders, the poisonous xanthin bodies, to escape detection by masquerading behind the innocuous and unconcealed uric acid.

#### EXCRETION OF ALLOXURIC BODIES.

The alloxuric bodies are excreted by the kidneys, the skin and the intestinal canal, and the manner in which these bodies may be excreted is a matter of much clinical importance, since probably the most important question which presents itself to the

clinician is, how can the excretion of these bodies be promoted. The kidneys play the most important rôle in the excretion of these bodies. They are removed by the kidney cells from the blood into the urine, and their presence in great excess in the urine means that, immediately before, they were in solution in excess in the blood. Disease of the kidney may cause an abnormal retention of these bodies in the blood and tissues, and it is my belief that the alloxuric bodies thus retained, and especially paraxanthin, contribute very largely to the nervous symptoms of acute and chronic Bright's disease (uræmia). However this may be, it is certain that these bodies are excreted largely by the kidneys and that their retention in the blood will cause profound nervous symptoms.

Alloxuric bodies are also excreted by the skin. This function of the skin is much more active during the hot summer months than during the winter months. This is one of the explanations for the increased liability to lithæmic attacks during the winter months. The undoubted value of many of the hot springs in the treatment of lithæmic conditions depends on the fact that the hot bath promotes the cutaneous elimination of the alloxuric bodies.

The gastro-intestinal canal is also a most important channel by which the excess of alloxuric bodies may be eliminated from the blood and tissues. I have demonstrated the presence of xanthin in the vomit of a patient suffering from a severe attack of migrainous gastric neurosis. Certain of the xanthin bodies and uric acid have been found in the fæces of healthy persons. They have also been found in the meconium of an infant with atresia ani. These facts show that the xanthin bases may be excreted by the gastro-intestinal canal. And this knowledge is of the greatest importance from a clinical standpoint, since at certain times it is necessary to call upon the intestinal canal to assist the kidneys and the skin in excreting an excess of these bodies which has accumulated in the blood and tissues. I shall have more to say of this in speaking of the treatment of lithæmia.

With this study of the origin, the physiological action and the manner of excretion of the alloxuric bodies, we are prepared to study the part which they play in the production of disease. The all important question now to be considered is, what do any

or all of these bodies have to do with producing the various manifestations of lithæmia?

First of all, let us consider the part which uric acid plays in the pathology of lithæmia. While uric acid, as previously said, can no longer with any semblance of justification be charged with producing the nervous symptoms of lithæmia, there are yet other charges against it in this connection, of which it is undoubtedly guilty. For example, it has been justly accused of being a factor in producing the arthritic symptoms of true gout, and of being wholly responsible for the symptoms which result from uric acid deposits in the urinary passages. And it may also be suspected of acting as a reflex factor in contributing to the general nervous irritability from which gouty patients commonly suffer. Above all, it must be remembered that uric acid produces symptoms only in a mechanical or reflex way and that its power for evil depends on its insolubility in the body fluids. This brings us to the consideration of the comparative insolubility of uric acid and its compounds in the body media. Of all the alloxuric bodies, uric acid and its compounds are by far the least soluble, and Roberts says that they are deleterious simply because of their sparing solubility in the fluids of the body. In truth, there is no reason to doubt that if uric acid were as soluble, it would be as harmless as urea, but its sparing solubility results in the precipitation of the biurates into the joints and other tissues when there is an excess of urates in the blood, or when, from a diminished alkalescence, the blood is less able to hold the urates in solution. Further consideration of this phase of the uric acid diathesis would lead us far afield and into the pathology of arthritic gout, which can hardly be considered among the lithæmic manifestations of childhood. Yet in this connection I wish to express the opinion that the joint pain and inflammation which may occur in lithæmic individuals is not fully explained by the deposit of urates in the cartilage and other tissues of the joints. It is not improbable that a shower of crystallized urates precipitated into the joint tissues may, as Roberts believes, cause considerable pain. Yet it is a fact that heavy deposits of urates are occasionally found in joints in which there has never been pain and inflammation, and that pain and inflammation occur at times in joints in which there is no evidence of uratic deposit. Moreover, I have reason to believe from my own observations



that other of the alloxuric bodies also play a rôle in producing acute joint symptoms.

The precipitation of uric acid into the urinary passages is of especial importance in the lithæmia of children. As previously said, uric acid infarctions are not uncommon in the newly-born infant. Free uric acid may be precipitated into the tubules of the kidneys, and these sharp uric acid crystals may cause considerable irritation and even result in nephritis. The fact that uric acid and its salts are more soluble in alkalies than they are in acids is here of much pathological and clinical importance. Anything that increases the acidity of the urine will predispose to the deposit of uric acid in the urinary passages, and anything that will decrease this acidity will have a tendency to prevent the deposit of uric acid. It is for this reason that alkalies are given for the relief of this condition. Uric acid calculi may occur in children, or in fact they may occur at any time in life, caused by the same conditions which produce uric acid infarctions. Uric acid infarctions may be washed out of the tubules and become the nuclei of calculi which may lodge in the pelvis of the kidney and pass on into the bladder. "Uric acid precipitation is responsible for the greatest number of urinary calculi in infants and children" (Jacobi).

Little is known, and little, therefore, need be said concerning the part which uric acid plays as a reflex factor in producing the nervous symptoms of lithæmia. It is not improbable that a deposit of urates may be so located as to impinge on nervous tissue in such a way as to be a factor in producing nervous symptoms, and that constant irritation of axis cylinder processes may in this way increase the excitability of the whole neuron. It would be unprofitable to speculate further on the possible influence which uric acid may have as a reflex factor in producing lithæmia. I have noticed the possibility of such an influence, only because I wish to do full justice to uric acid as a lithæmic factor. But after all has been said that can be said for uric acid, we are left almost wholly without an explanation of the manifold symptoms of lithæmia. Uric acid plays an important rôle in producing arthritic gout and urinary calculi, but it has little or nothing to do with producing that complex of symptoms which medical writers have described as lithæmic. Since, therefore, uric acid is not responsible for the toxic symptoms of lithæmia, we must look elsewhere for an explanation.

It is my belief, founded on almost four years of constant research, that paraxanthin and heteroxanthin are the important factors in producing the symptoms of lithæmia. This belief is founded upon the following propositions, which I have repeatedly demonstrated:

(1) Uric acid and its compounds are not poisonous.

(2) Paraxanthin and heteroxanthin are very poisonous leucomaines, not uncommonly associated in their excretion with uric acid.

(3) Paraxanthin and heteroxanthin are found in such small quantities in normal urine that their poisonous properties are lost in dilution.

(4) Paraxanthin and heteroxanthin are excreted in enormous excess by patients suffering from certain lithæmic attacks.

(5) The urine of these patients does not contain an excess of paraxanthin or heteroxanthin except at the time of these lithæmic attacks.

(6) Lithæmic paroxysms are not, themselves, the cause of the appearance of paraxanthin and heteroxanthin in excess in these urines.

(7) Paraxanthin and heteroxanthin are excreted but not formed by the kidney. Their presence, therefore, in the urine means that immediately prior to their excretion they were present in the blood.

(8) The paraxanthin and xanthin, separated from the urine of patients suffering from certain lithæmic manifestations are capable of producing in the mouse and guinea pig a group of symptoms similar to those from which the patient suffered.

(9) No other poisons have been demonstrated in lithæmic urine which are capable of producing the symptoms of lithæmia.

These propositions will be considered *seriatim*, to the extent that they require elaboration.

*First*, uric acid and its compounds are non-poisonous. This proposition has been previously disposed of, and need not further engage our attention.

*Second*, paraxanthin and heteroxanthin are poisonous leucomaines capable of producing the most profound nervous symptoms. The group of symptoms, produced by experimental paraxanthin poisoning, has been previously detailed and need not here be reproduced.

*Third*, as previously said, Salomon found 1.2 grammes of

paraxanthin in 1200 litres of normal urine. This quantity is so minute that its presence cannot be satisfactorily demonstrated in such quantities of normal urine as can be conveniently obtained from patients. In a recent personal communication Salomon says, "Nine litres of normal urine is a very small quantity to prove the presence of paraxanthin, if one has not previously worked with larger quantities so as to master the details of the work. Very much harder would it be to prove the presence of paraxanthin in 10 litres of normal urine, as I know from experience. I would advise that not less than 10 litres of normal urine be used to demonstrate the presence of paraxanthin." In previous papers I have recorded the fact that my own experience in this regard is in accord with that of Salomon. I have repeatedly failed to demonstrate the presence of paraxanthin when working with as little as 4 litres of normal urine. Upon this evidence I have concluded that paraxanthin is present in abnormally large quantities, when I can find it in less than 2 litres of urine.

*Fourth*, paraxanthin and heteroxanthin are excreted in enormous excess in the urine of patients suffering from certain paroxysms of lithæmia. I have convinced myself by the examination of the urine of more than half a hundred cases of migraine, that this urine commonly contains in enormous excess of both paraxanthin and heteroxanthin. In fact, migrainous urine contains such large quantities of these poisonous xanthin bodies that I now never require more, and oft-times get less, than 1 litre of urine for demonstrating their presence; and in the many examinations that I have made I have but to record few failures to find an enormous excess of these bodies in the urine of patients excreted during migrainous attacks. There can be no question but that the excretion of these poisonous xanthin bodies are coincident with attacks of true migraine, and in view of the fact that other forms of headache are not unaccompanied by the excretion of these bodies, it is a fair conclusion that the paroxysmal headache itself does not produce these poisonous xanthin bodies. Moreover, special note should be taken of the fact that the xanthin bodies which can be separated from migrainous urine are capable of producing in the mouse, rat, and guinea pig a group of symptoms which somewhat resembles the symptoms from which the patient suffered while excreting these bodies. It is, of course, impossible to determine whether these animals



have headache, but the intense reflex excitability and the late narcotism are present in both conditions. It is, therefore, I think, fair to conclude that paraxanthin and heteroxanthin are causes of the migrainous attacks.

I have, moreover, been able to demonstrate a like relationship between the excretion of excessive quantities of paraxanthin and heteroxanthin and certain epileptoid attacks which occur in lithæmic patients. I refer to the type of epilepsy which has been clinically described as migrainous epilepsy. This form of epilepsy is always associated with the excessive excretion of paraxanthin and heteroxanthin, and these bodies separated from such urine are capable of producing in the mouse and guinea pig almost exactly the same group of symptoms from which the patient suffered. If reference is made to the symptoms of experimental paraxanthin poisoning, which were previously detailed on page 565, and these symptoms be compared with the symptoms of migrainous epilepsy or grand mal, it will be found that the two groups of symptoms are almost identical. Again and again I have been able, in the mouse, rat, and guinea pig, to produce the symptoms of experimental paraxanthin poisoning with a solution of paraxanthin and heteroxanthin obtained from the urine of patients suffering from migrainous epilepsy; and the symptom group of the epileptoid attack was in every particular reproduced in the mouse and guinea pig. It is most important here to note that the epileptic paroxysm itself does not produce the paraxanthin and heteroxanthin. I have repeatedly examined the urine of patients suffering from focal and hereditary or reflex epilepsy and always failed to find these poisonous xanthin bodies in excess. These bodies are found in excess in the urine of the small group of toxic epilepsies known as migrainous epilepsies because of their association with migraine.

I have also demonstrated that paraxanthin and heteroxanthin are excreted in great excess in the urines of patients suffering with certain forms of gastric neuroses that occur in lithæmic individuals. These gastro-intestinal attacks are periodic in character, and have commonly as their most pronounced symptoms continuous vomiting and great gastric pain. Such periodic gastro-intestinal attacks occurring in lithæmic individuals are associated with the excretion of an enormous excess of paraxanthin and heteroxanthin.

*Fifth*, that the urines of lithæmic patients do not contain an

excess of paraxanthin and heteroxanthin at any other time than during or immediately following these lithæmic paroxysms is a fact which I have demonstrated by a large number of examinations. I have been careful to examine the urine at all times during the interval and have not been able to find any pronounced excess of these bodies in the urine of lithæmic individuals except during and immediately following lithæmic paroxysms, and then these bodies, as I have above noted, appear in enormous excess in the urine. When the above facts are considered, in connection with the one that no other poisons have been discovered in lithæmic urine which can be charged with producing the symptoms of lithæmia, it seems to me impossible to avoid the conclusion that the xanthin bodies, and especially paraxanthin and heteroxanthin, are the important factors in producing the nervous or toxic symptoms of lithæmia. Before dismissing the subject of the rôle which the xanthin bodies may play in the production of lithæmia, it should be noted that the xanthin bodies, other than paraxanthin and heteroxanthin may also play a part in producing the manifold symptoms of this condition. And it may also be suggested that the xanthin bodies are not the only poisons acting in the production of the symptom group which we designate lithæmia. It is not improbable that there are leucomaines other than the ones which we have considered which may play a part in the production of these symptoms.

#### ETIOLOGY.

Heredity is clearly the most important etiological factor of lithæmia. Lithæmia in infants and children always means that one or both parents suffer from some phase of the uric acid diathesis, such as gout, chronic arthritis, migraine, asthma, "nervous dyspepsia," "biliousness," or some other manifestation of lithæmia. Here the heredity is direct and the hereditary factor, whatever it may be, is the same in parent and child and does not necessarily mean degeneracy. I make this observation because of the statements of Sir William Roberts and Fothergill, that lithogenesis means reversion to a primitive type and that it therefore means degeneracy. Fothergill says that any chronic disease or physical inferiority of any kind in the parent may produce lithæmia in the child, that is to say, that the imperfect functional development of the liver, kidneys and other organs in these feeble children will cause in them a reversion in the

direction of a primitive metabolism which results in uric acid formation. On the authority of Fothergill, Lugol and others, we may accept the proposition that hereditary physical weaknesses may manifest themselves in excessive formation and deficient elimination of uric acid and in that way result in the presence of an excessive amount of uric acid in the blood and tissues. Such children as these suffer from uric acid infarctions in the kidneys, and such uric acid infarcts may be washed out of the tubules of the kidneys, causing pain and irritation, and afterward furnish a nucleus for the formation of kidney and vesical calculi. It is not an uncommon thing to find in the urine of newly-born infants such an excess of uric acid that the urates are deposited as a red powder on the diaper. This pathological condition is but an exaggerated physiological condition, which is soon corrected by the organs taking on their normal physiological functions, and such a condition may, in the opinion of Roberts, Fothergill and Lugol, be caused in the infant by any physical inferiority in the parent and does not necessarily mean a specific lithæmic inheritance. The urine of the newly-born infant contains an excess of uric acid, which is nothing more than the "vestigial remnant" from the primitive uric acid metabolism of our early ancestors. Under bad hereditary conditions this heritage may be so exaggerated as to become a pathological condition; a pathological condition which soon passes away and leaves only the normal and harmless amount of uric acid to testify to our humble origin. And after all, this has little or nothing to do with the toxic symptoms of lithæmia. The symptoms produced by uric acid during the early days of life are due to reflex and mechanical irritation from the deposit of free uric acid in the kidney or in the urinary passages. But there is no evidence of lithæmic toxæmia in these children at this early age. Nor is there sufficient reason for the common belief that degeneracy of any kind in the infant may be the cause of the toxic as well as of the uric acid or mechanical symptoms of lithæmia in the child or even in the man. Feebleness of constitution from any cause may possibly be a factor in producing a precipitation of uric acid or its salts into the urinary passages of the infant, and this condition may then be due to lack of development, or rather, late development of certain body functions, which soon pass away, leaving the child as free from lithæmia as other and stronger children, who have not inherited physical inferiority.



But the important rôle which heredity plays in predisposing to the toxic symptoms of lithæmia is no doubt dependent on certain characteristics of tissue types which pass from parent to child. While this phraseology may not be very definite, it comprises the thought that lithæmia is a specific and not a degenerate inheritance. The toxic symptoms of true lithæmic attacks are always a specific inheritance from lithæmic ancestors and not dependent upon any or all forms of physical inferiority.

Over feeding is an important factor in the production of lithæmia. Upon this factor Sir William Thompson lays special emphasis because of its very great importance as a cause of "biliousness" (lithæmia). A certain definite quantity of food is required each day to serve the purposes of the body. If more food be taken than can be used, it must be stored up as fat or carried off by the excretory organs. In this way the body may accommodate itself to the variable quantity of food taken from day to day. It is a fact that in almost all people of good digestive capacity the excretory organs are called upon to excrete much food which is taken in considerable excess of the needs of the body. The over worked excretory organs after a time fail to do their work and the blood and tissues are over charged with imperfectly oxidized organic material. An acute lithæmic attack, which one calls "bilious," supervenes and after a few hours or days of headache and vomiting, accompanied by the excessive excretion in the urine of the poisonous leucomaines, paraxanthin and heteroxanthin, the rested organs again resume their work and the "bilious" attack is over. Over feeding is an Anglo-Saxon habit which I believe is in part responsible for the prevalence of lithæmia among English speaking people. Haig has observed that an excess in the diet of fresh butchers' meat and of wine and malted liquors may produce lithæmic attacks in predisposed persons. To the accuracy of this clinical observation almost every physician will testify. An excess of spirits will also, in many individuals, precipitate an attack.

A sedentary life also predisposes to lithæmia, and this factor is especially potent when associated with the over feeding habit above noted. It is probable that sedentary habits increase the liability to lithæmic attacks by furnishing diminished opportunities for the oxidation of the poisonous xanthin bodies. It is a

recognized fact that the xanthin bodies, however they may be formed, may, under favorable conditions, be oxidized in the body into uric acid and urea. Active exercise in the open air will furnish favorable conditions for the oxidation of these bodies and in that way diminish the danger of auto-intoxication; on the other hand a sedentary life will furnish unfavorable conditions for the thorough oxidation of these bodies, and in that way predispose to the auto-intoxication which these poisonous xanthins may produce.

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**Renal Changes in Diphtheria.**—Reiche (*Centralbl. f. inn. Med.*) says that in eighty-five fatal cases of diphtheria before the serum treatment he always found more or less marked renal changes; seventy-five of the cases occurred in children under ten years. There were no characteristic naked-eye appearances. Microscopic changes existed chiefly in the parenchyma, in the interstitial tissue, and in the glomeruli. The former were present in but slight degree. There was cloudy swelling, and sometimes fatty changes in the renal cells. A crumbling away of the central part of the cells with consequent filling of the tubules with *débris* was noted. Only the remains of the cells could be seen in some places. In a very small number of cases a coagulation necrosis had led to destruction of the epithelium in places, but necrosis of single cells was much more frequent. In forty-four cases there was inflammatory proliferation in the interstitial tissue, and this was marked in seven cases. In some of the cases this was perivascular in distribution. The renal cortex was more affected than the medulla. The glomeruli were always involved. There was exudation into the capsular space, and alterations in the capillary loop as well as in the capsular epithelium. The exudation contained cellular remains, and occasionally red blood cells. Casts were seen in two-thirds of the cases, mostly hyaline, rarely granular, with cellular *débris*; they were found chiefly in the straight tubes, etc. In three cases there were interstitial hemorrhages. The vascular distension was variable. Thus, along with degenerative lesions, there were others of an inflammatory and productive character. These lesions are produced by the diphtheria toxins. Slight changes were also found in the liver, and sometimes in the pancreas. The author observes that the changes in all three organs were more common in cases dying of asphyxia.—*British Medical Journal*.

## TWO CASES OF MENINGITIS, APPARENTLY TUBERCULOUS, WITH RECOVERY.\*

BY GEO. N. ACKER, A.M., M.D.,

Clinical Professor of Medicine and Diseases of Children, Columbian University; Visiting Physician to the Children's Hospital and to the Garfield Hospital, Washington, D.C.

In the transactions of this Society for 1890 there is an instructive paper by Dr. W. P. Northrup entitled, "On What Early Symptoms May We Rest a Diagnosis of Tubercular Meningitis?" which was read by him at the New York meeting. An interesting discussion followed this paper, and many of the members took issue with Dr. Northrup as to the importance of the four symptoms which he regarded as the most reliable signs of tubercular meningitis in infancy. These were:

1. Persisting vomiting.
2. Irregularity of pulse.
3. Irregularity of respiration.
4. Apathy.

I shall present several cases in which the diagnosis of tubercular meningitis was made at first upon many of the symptoms which the gentlemen who participated in the discussion at that time held was necessary to make such a diagnosis, and yet the termination of the disease proved without any question that we had to deal with cases of cerebral symptoms associated with entero-colitis and pneumonia. I report these cases to show how difficult it is to make a positive diagnosis in the earlier stages of the disease. In fact, a positive diagnosis cannot be made unless there is a necropsy.

G. W., aged three years, black, male, was admitted to the Children's Hospital, September 7, 1896. Family history negative. Three weeks ago the child was taken ill in the country, the details of his illness being unknown.

*Present Condition.*—Child is rhachitic; fontanelles are open; ribs beaded. The abdomen is much retracted, but is not tender. The spleen is enlarged; marked retraction of the head. The lines of the face are drawn, the eyes are sunken, and there is dulness of expression; cries out when disturbed. The bowels

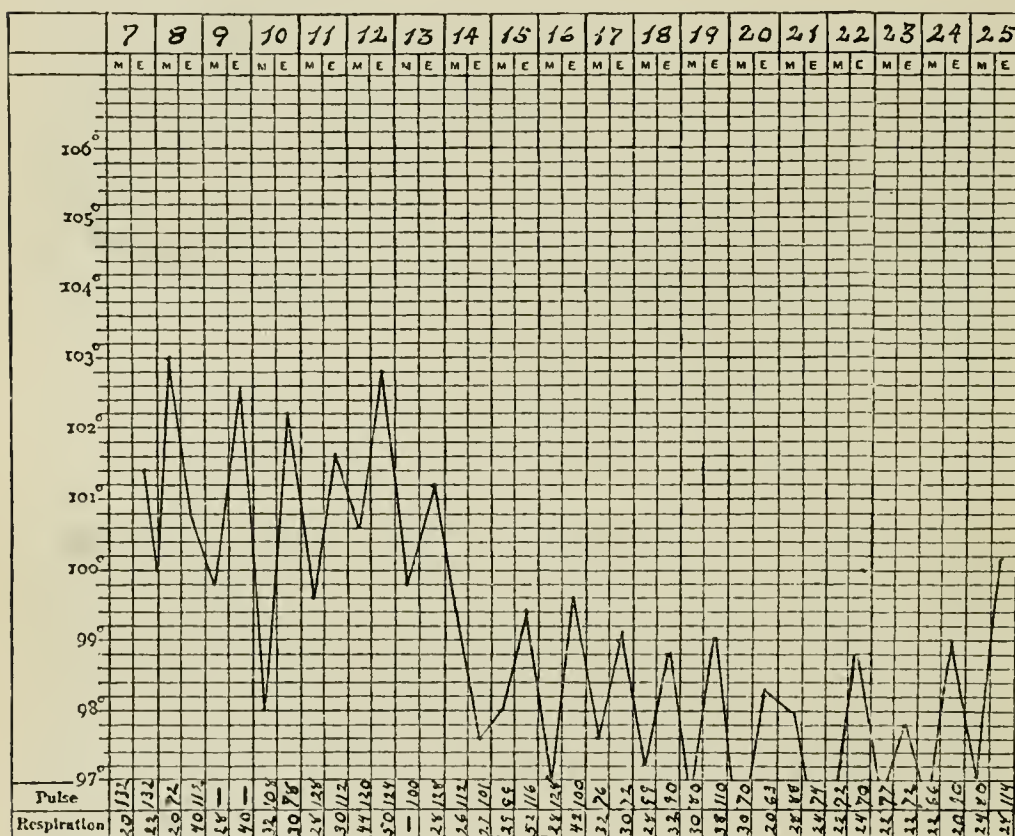
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\* Read before the American Pediatric Society, Washington, May 4, 1897.



are very loose; stools are frequent, offensive, and of a greenish color.

Anteriorly there is dulness at the apices of both lungs. There is rude breathing over upper part of both lungs, more marked on the right side, with some small mucous râles. Posteriorly there is slight dulness on both sides, with harsh breathing on the right side; no glandular enlargement; pulse weak and irregular, 132; temperature, 101.4°.



orbiculo-nasal lines are strongly marked. The mouth is dry, the tongue coated, and the lips parched and bleeding. The temperature is irregular, ranging at about 102°.

September 11th. Slept well during early part of night, but latter part screamed continually, and it was necessary to give two doses of tincture of hyoscyamus. Nine dark green undigested stools to-day. Ordered carbolic acid, 1 drop, and bismuth subnitrate, 3 grains, every two hours.

September 12th. Appears brighter this morning. Cried out a few times during the day, and at night screamed out frequently. Took nourishment well. Four dark green undigested stools. Bismuth subnitrate, 3 grains, mixture of assafœtida, 1 teaspoonful, every three hours; tincture of hyoscyamus, 15 drops, bromide of sodium, 10 grains, at night.

September 13th. Was quiet during day. Turpentine stupes were applied to abdomen on account of distension.

September 14th. Rested well during the day. Six large undigested stools during the day.

September 15th. Cried out several times during the night. Is much weaker. Temperature is subnormal. Four dark greenish undigested stools. Ordered strychnine sulphate ( $\frac{1}{120}$ th grain), aromatic spirits of ammonia, 5 drops, every four hours.

September 16th. Slept well; only cried out a few times; brighter this morning; several screaming spells during the day; five green undigested stools to-day. There is trismus of the hands and feet.

September 17th. Slept soundly nearly all night. Three loose undigested stools.

September 18th. Slept well. Takes nourishment well. No trismus to-day. Is much brighter. Three loose undigested stools.

September 19th. Two loose yellow stools. Has been quiet for several days.

September 20th. Two loose yellow stools. Temperature is subnormal most of the time. The child is apathetic. No tympany of abdomen.

September 21st. Five partly digested stools.

September 25th. The lines are leaving the face, and the boy is gaining in flesh and strength.

September 26th. Strychnia and ammonia stopped, and mixture of phosphorus, 1 teaspoonful, three times a day ordered.

October 1st. Much improved.

November 16th. Discharged.

The diagnosis of this case is cerebral symptoms with enterocolitis, but we have the following symptoms, which point to tubercular meningitis:

(1) Race; (2) Lung disease with rickets; (3) Retracted head; (4) Retracted abdomen; (5) Screaming spells; (6) Apathy; (7) Irregularity of pulse and respiration.

E. B., aged nine years, male, mulatto, came under treatment January 28, 1897. The mother and father are living and in good health. The patient is the second child of a family of seven, three of whom died in infancy of cause not known.

*Previous History.*—The child was delivered normally and breast fed for six months; was then placed upon cow's milk until weaned at the age of one year. At the age of two years sustained fracture of right femur. During his third year the child had scrofulosis, with severe suppurative cervical adenitis. Two years ago he was treated in this hospital for a period of six months for scrofulous keratitis. Since September of last year he has had "chills and fevers," but for the last two weeks they have been absent and the child has been in fair health.

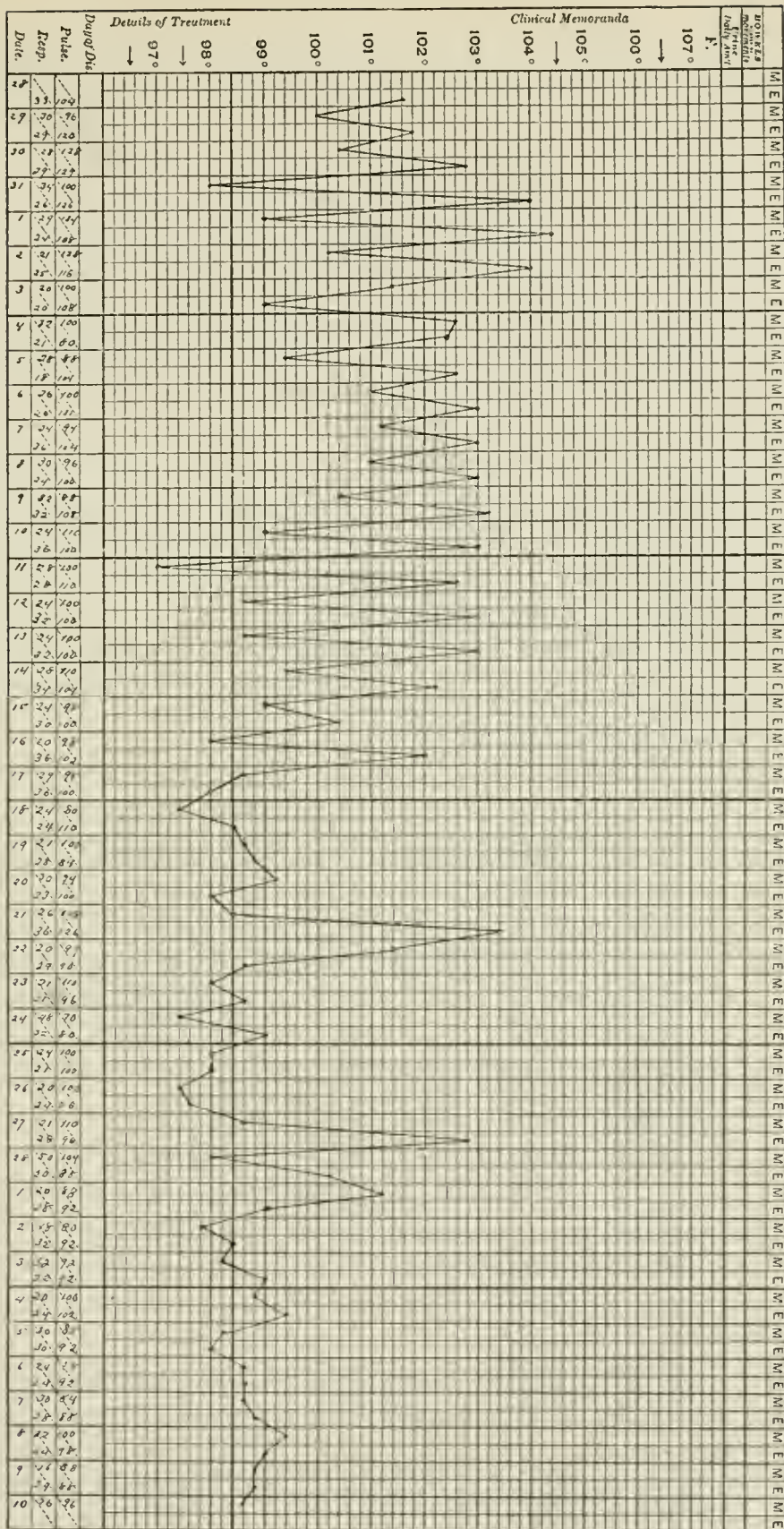
*Present History.*—Monday evening, January 25th, the patient had a chill, accompanied by vomiting. Vomiting has continued since then at intervals, coming on spontaneously as well as when attempts are made to administer food. He had complained of pain in the back between the shoulders and in the spine. There has been retraction of the head since the 26th, becoming more marked as the disease has progressed. There has been fever and delirium since the commencement of the disease. He has had a frequent loose cough. Child prefers the lateral decubitus. The head is retracted, and muscles at the back of the head rigid. The bladder is distended with urine.

Slight dulness on right side anteriorly and posteriorly. Harsh broncho-vesicular breathing, with some small râles on the right side anteriorly. Temperature is 101.6°. There is a strong, quick pulse, ranging about 120 per minute. The *tache cérébrale* is well marked.

Was given a bath, and one-half grain of calomel was ordered every hour for four hours.

January 29th. The patient was delirious the first part of the night, but slept well. More rational this morning. Complains





TEMPERATURE RANGE IN SECOND CASE.

of pain in the back of the head. Two good actions from the calomel. Ordered salol ( $2\frac{1}{2}$  grains), and acetanilide (3 grains), every three hours.

January 30th. Slept well and takes nourishment well.

February 1st. Complains of frontal headache.

February 2d. Is drowsy and does not like to be disturbed.

February 4th. The patient sleeps almost all the time. Cries out if disturbed. Does not rouse easily. Since admission the range of temperature has been  $90^{\circ}$  to  $100^{\circ}$  in the morning;  $103^{\circ}$  to  $104^{\circ}$  in the evening. The pulse and respiration have been irregular.

February 5th. The right lung is in about the same condition. On the left side there is a slight dulness with broncho-vesicular breathing anteriorly. The head is markedly retracted. He complains of frontal and occipital headaches. There is a marked delirium at times, especially at night.

There has been obstinate constipation since admission, for which it has been necessary to give enemas. Castor oil was given to-day with good results.

February 8th. Takes nourishment well. Pain in the head occasionally. There has been up to this time great prominence of the superficial temporal vessels, the arteries being seen to pulsate even in their finest ramifications. This prominence is not well marked now, and the circulation is feeble. The child is drowsy and dull. The respirations are superficial and irregular. There is some dulness on both sides of the chest anteriorly with broncho-vesicular breathing and râles on deep inspiration. The pulse is weak and changes in rapidity frequently. Salol stopped and one-sixth grain of calomel ordered every hour.

February 8th, 9th, and 10th. The temperature has ranged from  $101^{\circ}$  to  $103^{\circ}$ . There is considerable retraction of the head, which now amounts to opisthotonus, the child resting on his head and heels when turned on his back. Ordered phosphatic emulsion, two teaspoonsful, with creosote, half-a-drop three times daily.

February 10th. Sleeps well. Lies quietly all the day. Is irritable if disturbed. Does not speak unless forced to. Takes nourishment well. Some dulness on percussion on right side. On deep inspiration there are some râles lower part of both lungs anteriorly and posteriorly. Coughs occasionally and complains of pains in head.

February 18th. The child has been in the same condition for a week. The temperature has ranged between  $99^{\circ}$  and  $103^{\circ}$ . The constipation has continued. The head is less retracted. Is less irritable.

February 20th. The patient was ordered semi-solid food. The temperature has been normal since the 17th; as there were several cases of diphtheria in the ward, a prophylactic injection of 500 units of antitoxin was given this evening.

February 29th. The temperature has been about normal with the exception of a rise to  $103^{\circ}$ – $4^{\circ}$  on the 22d, and  $103^{\circ}$  on the 28th. The retraction of the head has disappeared and he is much improved.

March 10th. Is sitting up. The lungs are about normal. The bowels are regular.

This case was one of cerebral symptoms with pneumonia. The following symptoms appeared to make the diagnosis of tubercular meningitis in the earlier stages a certain one:

(1) Race; (2) Previous history of tubercular adenitis and keratitis; (3) Vomiting; (4) Retraction of head; (5) Lung trouble; (6) Obstinate constipation; (7) Apathy; (8) Irregularity of pulse and respiration.

If there had been a fatal termination in these cases I should have recorded them as tubercular meningitis. The complete recovery of both renders such a diagnosis a very doubtful one. I do not say impossible, for there have been cases reported of recovery from tubercular meningitis, and though we should expect such a termination to be rare, yet reasoning from what occurs in other organs it is not difficult to think that similar results could be obtained here. Dr. Samuel West ("Clinical Society Transactions," Vol. XXVIII.) relates the history of a girl aged two years, seven months, with all the symptoms of the disease, who after a prolonged sickness recovered. Her brother, aged nine months, entered the hospital about the same time with similar symptoms, and died in several months. The necropsy proved the cause of death to be tubercular meningitis. It is fair to hold that the girl had suffered from the same disease, especially as there was an hereditary tendency. There have been other strong cases reported.

I have examined a number of my cases where a necropsy verified the diagnosis, and the symptoms and temperature rec-



ords followed closely along the lines of the cases presented to-day. Reasoning from analogy, I should have been justified in calling them tubercular meningitis if recovery had not taken place.

913 SIXTEENTH STREET.

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### DISCUSSION.

DR. A. JACOBI.—According to what Dr. Acker has told us it would be rather arrogant to say that one has seen a case of tubercular meningitis that recovered. Much depends upon what we call getting well. In a family where there was a good deal of tuberculosis I had a child sick with what appeared to be tuberculous meningitis and it got well. That was about thirty years ago. The man has now been in a lunatic asylum for eleven or twelve years. He was never right in his mind; he was always stupid and wayward. Whether it really was a tuberculous meningitis I cannot tell, but his surroundings were such that I had every reason to believe it to be just that. For the time being he got what is called well; that is to say, he lived and still lives. I should not call that recovery. This is one of the very few cases where I made the diagnosis of tuberculous meningitis and saw it get well, as we call it. One case, which I never was able to prove to be tuberculous meningitis, during the course of the disease, got well under the influence of large doses of iodides and, what was then in vogue, ointments of tartar emetic. They were used in the same way as they now use iodoform ointments. The result in that case was extensive ulceration of the scalp and necrosis of the bones. While that was going on the child certainly improved very much, was conscious again and had no convulsions and the pulse became regular. It died finally, perhaps of meningitis, certainly of the ulceration of the scalp and bone. Tubercles were found in that case. These are almost the only cases that I have seen getting temporarily better. But there are cases; one case I remember to have seen in literature where tubercles were found a number of years after the diagnosis had been made and the child recovered. The child died of pneumonia and old tubercles were found in the meninges. It is a question whether anything more could have been obtained for the purpose of diagnosis in the case of Dr. Acker. I understood that lumbar puncture was not made.

DR. ACKER.—It was contemplated at the time but the child got a good deal better.

DR. L. EMMETT HOLT.—I have seen two cases that may be of interest in this connection. One child, who had generalized tuberculous deposits, involving the lungs, glands, intestines,

spleen and liver, as shown by autopsy, died of a non-tuberculous meningitis. The lesions were those of acute purulent meningitis. If that child had recovered it might have been regarded as a case of tuberculous meningitis with recovery. Another case I saw a number of years ago where a child with double hip joint disease developed meningitis and got well. The child died from amyloid disease six months later and the autopsy showed no trace whatever of tuberculosis in the brain.

It is not always quite safe to draw conclusions from what exists in the other organs of the body, although if meningitis is present, the existence of tuberculosis elsewhere of course always makes the diagnosis of tuberculous meningitis the probable one.

DR. JACOBI.—I think these cases ought to encourage us not to persist in the practice of giving iodide of potassium, looking on, and writing a death certificate. A number of these cases will get well, and, as that is so, certainly the prognosis is not so very bad as we have been in the habit of thinking. Lumbar puncture and the relief given by it in a number of cases of simple acute serous meningitis looking like tubercular cases ought to encourage us to do a little more, and something more has been done. A number of cases have been recorded in which these cases of meningitis have been directly attacked. Direct punctures have been made in children where no ossification had taken place in the fontanelles. In a number of cases where ossification had taken place they have been trephined and then punctured with good results. A small number of such cases have recovered and I think there will be more such cases in the next few years.

DR. DILLON BROWN.—We now have three valuable aids for diagnosis in tuberculous meningitis and none of these cases should be classed as recovery from tuberculous meningitis, unless the diagnosis is confirmed by lumbar puncture, by a positive reaction from tuberculin, or by the presence of tubercles of the choroid, as shown by an ophthalmoscopic examination. If there are meningeal symptoms and tuberculosis of the choroid there is strong evidence in favor of a tuberculous meningitis; if there is meningitis, lumbar puncture may give a positive answer, and tuberculin always will give a positive answer.

DR. ACKER.—It is not always easy to make a lumbar puncture and if you do and the results are not positive you are still in doubt. In regard to the examination of the choroid, I have had that done in a number of cases with negative results and yet autopsy showed that there was an undoubted tuberculous meningitis.

## A FREQUENT SIGNIFICANCE OF EPISTAXIS IN CHILDHOOD.\*

BY J. HENRY FRUITNIGHT, M.D.,

Visiting Physician to St. John's Guild Free Hospital for Children,  
New York City, etc., etc., etc.

Maggie C., aged eight years, was brought to me by her parents for treatment for recurrent attacks of epistaxis. She had been under the care of a well-known rhinologist of New York City, for several months, but his topical treatment, which, based upon his standing in the profession, must undoubtedly have been most excellent, was futile. A close inspection of the nasal cavity revealed no lesion whatever. A physical examination of the chest disclosed a mitral regurgitation with cardiac hypertrophy. The child had had an antecedent attack of acute rheumatism. Treatment was directed to this cardiac affection, as a result of which the attacks of epistaxis ceased. The fact that the patient had been treated locally for so long a time by an able specialist, who had evidently overlooked the organic cardiac lesion, impressed me very forcibly. Thereafter I examined the heart in every case of epistaxis that came under my care, and conversely in every case of organic heart disease, I made inquiries as to the occurrence of epistaxis, quite a large number of cases of both classes having come under my observation.

Of course neither all cases of epistaxis were accompanied by cardiac lesions, nor did all cases of organic cardiac disease have attacks of epistaxis. A sufficiently large number of cases to be noteworthy, however, exhibited the co-existence of epistaxis and organic heart affections. I have the clinical records of twelve cases of this description. These histories may be epitomized as follows: The patients all had a valvular lesion, some a mitral, others an aortic, and in two instances both mitral and aortic combined, and all accompanied by cardiac enlargement, either hypertrophy or dilatation. All had had previously at least one attack of acute articular rheumatism. Some had a family history of rheumatic taint. In some the rheumatism had been a complication of or a sequel to an attack of scarlet fever. In some there was a co-existent chorea.

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\* Read before the American Pediatric Society, Washington, May 4, 1897.



How can the recurrent attacks of epistaxis in these cases be explained? Obviously the anatomical arrangement and structure of the vascular supply of the nasal mucous membrane must play an important part in the mechanism of the bleeding. This anatomical fact also explains why predisposition to epistaxis is greater in children than in later life. Before the period of second dentition, however, epistaxis is encountered very rarely indeed. As is well-known, a great wealth of blood-vessels is found in the mucous membrane of the nose. Their arrangement is also peculiar. Quite large venous cavities exist between the periosteum and mucous membrane, especially posteriorly on the turbinated bones. There are numerous anastomoses between the arterioles of the mucous membrane.

Changes in the blood pressure in the vascular system will cause the nasal mucous membrane to become swollen, red or dark, and turgid to the point of bursting, thus inducing a tendency to bleed. Furthermore, the pituitary membrane in childhood is very loosely connected with its base and is covered with a delicate cylindrical ciliated epithelium, which gives but weak support to the walls of the many omnipresent blood-vessels.

Those conditions of the vascular system in which the *lateral* pressure within the blood-vessels of the nose is changed, as when there is a restriction to the flow of blood through the veins or an increase of pressure within the arteries, are conducive to the occurrence of epistaxis. A paroxysm of pertussis is an example of the first, and hypertrophy of the left ventricle of the heart is an instance of the second variety of deviation from the normal blood pressure.

Epistaxis will occur at times in children of a sanguine temperament who are not the victims of organic heart disease.

I am fully aware that what I have said is not new, but my object is to again direct attention to a clinical fact which seems to a great extent to have lapsed into forgetfulness; for I have observed in my perusal of writings whether treating of epistaxis or of organic cardiac diseases, most authors do not mention their clinical relationship at all, while those who do, dismiss it with a bare illusion.

*En passant*, I may be permitted to say that, barring the purely mechanical measures, the local use of expressed lemon juice is perhaps the most efficacious remedy to staunch bleeding from the nose.

In conclusion then it can be stated, that epistaxis in childhood and particularly if the attacks be recurrent is *frequently significant of organic cardiac disease*, and as a corollary thereto, that in every case of epistaxis a physical examination of the heart should be made.

161 WEST FIFTY-SEVENTH STREET.

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**James, Alexander : A Case of Rickets Beginning at the Age of Seventeen Years.** (*The Scottish Medical and Surgical Journal.* 1897. Vol. i., No. 1.)

The author reports in great detail the history of a case of a man of twenty who was suffering from a most peculiar condition, the diagnosis of rickets being the only one apparently possible to make. The various abnormal conditions present are described most minutely and several skiographs illustrate the case still farther. The age of the patient renders the case one of unusual interest.

**Tucker, Milo : The Involuntary Movement of Adults and Children.** (*American Journal of Psychology.* 1897. Vol. viii., No. 3.)

The author reports a very extensive series of observations made in the laboratory of Leland Stanford University, from which he reaches the following conclusions:

1. There is a physiological tendency for the hands and arms resting in front of the body to move inward toward the median plane of the body.
2. There is no certainty that when we see an object we tend to move toward it. We may think of it simply as an object at rest, and the idea of motion is necessary to cause movement in that direction.
3. Involuntary muscular movements may be controlled by the influence of the sight or vivid visual remembrance of moving objects; and the imitation of the direction of moving stimuli is the result.
4. Children are governed by and subject to the same laws as adults, but to a less extent.
5. There is no sex or age difference in children, either in involuntary or controlled muscular movements.

SYNOPSIS OF FIFTY-SIX CASES OF EMPYEMA OPERATED  
UPON DURING 1896, IN THE CHILDREN'S SERVICE  
OF MOUNT SINAI HOSPITAL, NEW YORK, WITH  
REMARKS.\*

BY B. SCHARLAU, M.D.,

New York.

The proper treatment of empyema is still open to discussion, and the views differ widely; therefore I thought it timely to bring before you a comparatively large number of cases, all treated within one year in the same hospital after a uniform plan: namely, primary exsection of a rib in every case.

I have operated in 1896 upon fifty-six children, twenty-eight male ones, and twenty-eight female ones; the youngest patient was fifteen weeks, the oldest one was thirteen years old. The empyema was found thirty-five times on the right, twenty times on the left and once on both sides (this two-year-old patient recovered). As far as could be ascertained the children were sick on admission: One week, twice; two weeks, eleven times; three weeks, thirteen times; four weeks, six times; five weeks, six times; seven weeks, once; two months, five times; three months, once; unknown, six times.

In twenty-two cases the patients did have or still had pneumonia. There is a marked difference in the results during the first and the second six months of the year. While in the last half year only two died out of twenty-six cases, sixteen<sup>]</sup> died out of thirty-two during the first half year, making a total of thirty-six recoveries and eighteen deaths; two children left the hospital improved (by request of the parents).

A death rate of 33 per cent. seems to be rather large, but the results will appear in a much better light, if we look into the causes of deaths: Two poorly nourished children died within three days after the operation, and in these cases alone the shock from the operation might be accused as having caused death; one child died suddenly from an unknown cause when really well; two children died from measles and one from diphtheria, when nearly well; two died from tuberculosis; eight died from

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\* Read before the American Pediatric Society, Washington, May 4, 1897.



pneumonia, probably on a tubercular basis; one died from diarrhœa; one died from exhaustion.

In summarizing we find that from fifty-six cases only two died possibly in consequence of the operation, while sixteen died from causes which had no connection whatsoever with the surgical procedure; therefore it may well be said that the exsection of a rib is a comparatively harmless operation.

I do not intend to-day to dwell on its merits and demerits, wishing to discuss only one point in regard to the after-treatment. About a year and a half ago during a discussion of empyema in the New York Academy of Medicine, Dr. Henry D. Chapin mentioned that he had operated a few times by exsecting a rib, but that he had returned to his old love, a simple intercostal incision, because after rib-exsection often a thoracic fistula remained which it was found difficult to close. But such a fistula will even be observed not infrequently after an intercostal incision. What is it caused by? Either the lungs have not sufficiently expanded, or the chest-walls have not sufficiently sunk in, thereby allowing a cavity to persist, from which a constant flow of pus will force its way. Such a condition does not depend on whether we have operated by exsection or by incision and cannot be laid at the door of the former method. On the contrary an extensive secondary exsection of three or four, or more ribs will mostly result in a complete cure.

But Dr. Chapin probably meant those cases in which the fistula is due to diseased or dead bone, and I admit that they are oftener met with after exsection than after incision. What I deny is, that it is difficult to close such a fistula. All we have to do is to remove the dead or diseased tissue and let the wound fill up by granulation. That we have to do such a secondary operation not unfrequently after exsection is in my opinion caused by the too rapid regeneration of the exsected rib, while the process of suppuration is still going on, thereby preventing the formation of a normal bone. I lay before you a specimen which clearly illustrates the conditions existing under such circumstances: A few months ago I operated on a little boy two years old; all seemed to go well and the little patient left the hospital cured. He returned ten days ago with two small fistulæ leading to diseased bone. A week ago to-day I excised almost the whole rib from the cartilage to nearly the spine. The specimen shows

that the exsected rib had been regenerated but that the new bone had been interspersed with exuberant granulations; the child is doing well and will shortly be cured completely and permanently.

66 WEST THIRTY-FIFTH STREET.

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#### DISCUSSION.

DR. HENRY D. CHAPIN.—Dr. Scharlau speaks of a criticism which I made in that discussion. The point that I wished to bring out there more particularly was that the simpler operation in the majority of cases was all that was necessary. I have seen Dr. Scharlau operate for empyema and he does it with skill, and his results are good. If, however, an early diagnosis is made of empyema, in the great majority of cases, a simple incision will be followed by cure in a few weeks, so that my principal contention then and now is that the simpler operation is preferable. With reference to a sinus, I think it will follow oftener after exsection of a rib than after simple incision.

DR. L. EMMETT HOLT.—I regret that Dr. Scharlau did not give the length of time the sinuses discharged. It seems to me that is a factor of some importance. I believe that as a rule cases where exsection of the rib is done, discharge for a longer time than those where only a simple incision is made. I agree fully with the opinion expressed by Dr. Chapin, that in the vast majority of cases in young children, if we can get them reasonably early, a simple incision is all that is necessary; and that the period of illness is considerably shortened where the incision only is made. If they get well promptly, as certainly the great majority of them do, it seems unwise to subject the child to the more serious operation where there is great danger of some necrosis. I think, also, that the mortality in Dr. Scharlau's cases is pretty high, higher in fact than I have seen after the simpler operation in the same class of patients.

DR. W. P. NORTHRUP.—There was one case in which I operated upon one side and had the opportunity of observing a control experiment upon the other side. I went to a summer town and found a case of double empyema in a boy of seven years. He was in an extreme condition. After a little whiff of ether I made an incision between the ribs, making it the shortest, quickest way, a sort of plunge operation. In fifteen days the tube was out and the wound all closed. It might have been out on the twelfth day; it was so advised, but by some misunderstanding it was not taken out until the fifteenth. By some strange happening of fate I did not get opportunity to operate on the other side. The child went to another town and there had an expert surgeon. Everybody knows that a surgeon will

always say in a case of this kind "take out a rib." That is all he will say with regard to empyema. He did take out a rib and the child had the satisfaction of trying both methods. In one the tube was out and the wound healed in fifteen days; in the other it was discharging for two to three months. This was in the same person; the only difference being that a little time had elapsed and he had perhaps run down a little in that time.

DR. WILLIAM OSLER.—It makes a great difference what the bacteriological examination reveals. It is generally recognized that in certain cases of pneumococcus empyema a less serious operation than incision, a simple tapping, may suffice. In the cases of streptococcus empyema I think the surgeon who makes a free opening does best for the patient. Does any bacteriological report accompany these cases?

DR. A. JACOBI.—No. Dr. Osler says that in the latter cases he prefers exsection?

DR. OSLER.—Yes.

DR. HENRY KOPLIK.—I think we should consider that these cases are hospital cases, and the results in hospitals are not as good as in private practice. We must remember that in the hospital the case comes as a *derniere* resort. It makes a great difference whether you operate on a child or an infant, and whether at the eighth day or the eighth week of the disease. Therefore, the kind of patients we have to deal with should be taken into consideration. The material that Dr. Scharlau has is a mixed one. Some cases are exceedingly weak when they come to the ward and some are strong.

The next point we have to consider in these cases is the variety of disease; a tubercular case, a meta-pneumonic case, or a streptococcic case. The streptococcic cases are very dangerous for this reason: You make a wide incision in the chest wall and an immense mass of pus pours over the fresh wound, and within the next two or three days you may have an infection of the opposite lung or of the same lung with pneumonia. A great many of these cases go to the wall with recurrent pneumonia due to infection as the direct result of the operation.

Considering these facts I have formulated the mode of treatment which I would pursue in these cases. In the first place I would consider the condition of the child when it came under my care. If the child was in a weak condition I certainly would not exsect a rib, but would temporize with simple incision, or I would simply aspirate. I would get the child stronger and then I would decide on the operation. If the infant was very young, below a year old, and there was a moderate chance of keeping that infant quiet in bed I would simply incise or syphon the chest under antiseptic precautions as recommended by Dr. Buelau. If the child was strong and there was reason to believe the child could stand it, exsection of the rib would not be a bad operation.



As to the point that Dr. Northrup brought up regarding the length of time required for healing: I have seen Dr. Scharlau's patients get well in eight to twelve days and the discharge entirely cease. In a tuberculous case you may resect repeatedly and yet the child will not get well. Much depends, therefore, upon the character of the case. I think we should pick our operation for the individual case. In private practice exsection of the rib yields better results than in hospitals. If you make your diagnosis in private practice on the tenth day you have a child in tolerable condition and if a rib is exsected you do not run the same chance of infecting the lung, and if there are many clots in the chest there will be more complete drainage after resection than after simple incision.

DR. NORTHROP.—Dr. Koplik has hit the nail on the head. I am speaking of the kind of cases in the New York Foundling Hospital where we get them early and which do perfectly well with incisions. It is the opinion of Dr. O'Dwyer, who gave me the first lessons in it, and my own opinion derived from subsequent experience, that the quick operation between the ribs is best in early cases. We do make bacteriological examinations; we also drain early.

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**Morse, John Lovett; A Study of the Blood in Rickets.**  
(*Medical and Surgical Report of the Boston City Hospital.* 1897.)

This paper is based upon observations made upon twenty cases of rickets, for the purpose of determining what changes in the blood take place in that disease. After a thorough study the author believes that the results obtained in these cases, together with those obtained by others, seem to justify the following conclusions: Most cases of rickets are accompanied by anæmia. This anæmia may be of any form and of any grade of severity. The severity of the anæmia varies in a general way with the severity of the process. The most common form is that in which the number of red corpuscles is normal or nearly normal, and the percentage of hemoglobin both absolutely and relatively diminished. The anæmia may or may not be accompanied by leucocytosis. Leucocytosis occurs more frequently in the cases with splenic tumor than in those without. It may be due to an increase in any or all of the varieties of white corpuscles. The specific gravity varies with the amount of hemoglobin. Finally, there is no form of anæmia found in rickets which may not be found in other conditions, and no form of anæmia found in other conditions which may not be found in rickets.

# UNSUSPECTED NEPHRITIS, AND A PLEA FOR MORE FREQUENT AND CAREFUL ANALYSIS OF URINE.

BY JOHN H. SEILER, M.D.

Akron, O.

It frequently happens in the experience of the life insurance examiner that he finds incipient, or even serious renal disease, when he analyzes the urine, in subjects who regard their health beyond question, and consider themselves good risks, there being no symptoms apparent to themselves or observers to lead them to suspect renal derangement.

The largest amount of sugar I ever found in diabetes melitus was in a German lady, aged about forty, whom I examined for life insurance. She smiled at the idea of calling her health into question. She was a picture of health and the physical examination proved negative. Much to my astonishment the urine was about three-fourths sugar by volume. She died about four months after. Possibly the knowledge of her condition hastened the termination.

So with other diseases, especially Bright's disease, of which I have discovered a number in people who suffered no inconvenience, and suspected nothing wrong.

The same thing I have observed in young subjects, who showed none of the symptoms ordinarily concomitant with renal disorder, such as pain in the back; deficient or excessive urination; pale, or highly colored urine; sediments of various kinds; œdema of face and extremities; ascites; inordinate thirst or precarious appetite.

The following case will serve to illustrate one of these conditions:

A boy, aged fifteen, who, aside from a light attack of measles seven years before, had apparently always enjoyed good health. The father and mother are intelligent and take a great interest in their children.

I wish to emphasize this negative appearance of symptoms, because the pathological condition was extreme. The kidney was found to be so disorganized that I believe I am justified in dating the beginning of the trouble back to his attack of measles, seven years before. If so, if the urine had been examined then,

the trouble might possibly have been averted. Therefore I think we ought to make it a routine practice to examine the urine in cases of exanthematous diseases in children.

Early in June, 1894, the father was in swimming with him, and observed an enlargement of the right side of the scrotum. Suspecting it might be a hernia he attempted reduction in the evening, but with negative results. He had no pain and complained of nothing. Late in June, however, the mother observed that his face was a little full. Having a premonition of something serious she sent for me on June 30th.

*Present Condition.*—Face pallid and slightly puffed; legs, from knees down, a little œdematous; heart action regular, but a little feeble; appetite good; bowels regular; no pain; no swelling about scrotum; no history of chill or fever; urine scant, about one pint *per diem*.

*Analysis.*—Light colored; foamy; slight odor; specific gravity 1005; albumin equivalent to about three-fourths the total volume in test tube; no casts or pus.

*Progress.*—Two weeks later the anasarca became more marked, but never extreme, and at no time interfering with the action of heart or lungs. Ascites at no time extreme. The scrotum was now filled again to its full capacity and had a bright, shiny look. But by means of astringent evaporating lotions this was soon reduced to normal size and so remained.

There was no nausea, but the stomach was so irritable as to make it almost impossible to retain medicine or nourishment. The bowels moved on an average about once in two to four hours.

At no time did the quantity of urine exceed a pint a day, retaining the same characteristics—specific gravity 1010, the albumin being from one-half to three-fourths by volume in the test tube.

He had uræmic exacerbations about once in six or seven days, which were relieved by thorough diaphoresis, by means of pilocarpine. But the last time, on August 6th, before death came to his relief, diaphoretics, internal and external, had no effect. While before three to four doses of one-twentieth of a grain of nitrate of pilocarpine on the tongue produced all that was desired, at this time one-tenth grain doses every hour failed to act. Uræmic coma came to his relief about midnight.

During the first uræmic exacerbation he had complete paraly-



sis of the right arm, which came on suddenly, remained about twenty-four hours, and disappeared suddenly. During the second exacerbation the left arm was affected in the same way with the right, but only lasted about twelve hours.

A *post-mortem* examination was at first refused, but I was finally permitted to remove the kidney. It being an anomaly, it was only after the most careful and diligent search that I found and extricated the one kidney, which was all he had. This was located on the right side, about opposite the second and third lumbar vertebræ, and was bound down by the peritoneum to the back of the abdominal cavity, as if a cloth were thrown over it.

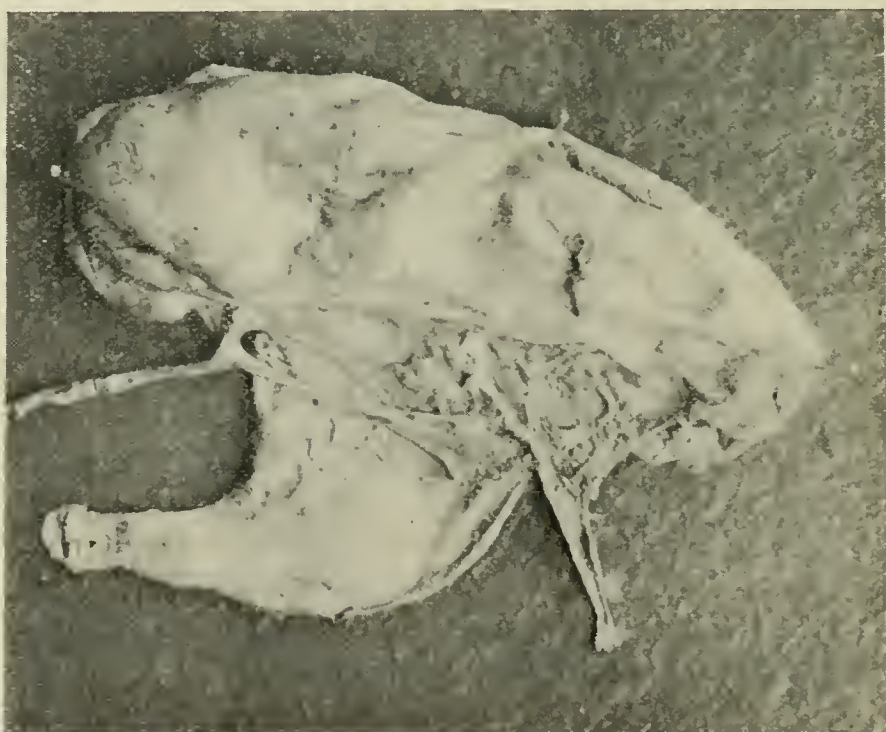


FIG. 1. KIDNEY AS IT APPEARED WHEN REMOVED.

The kidney was very much enlarged, being about six inches long, three inches wide and two inches thick. The pelvis of the kidney was about three times its normal size. It was light colored, and instead of a smooth, regular outline it was irregular, and had a nodular feel and appearance. The nodules were not hard, but upon section were found to be full of urine. The whole cortex was honeycombed, and filled with albuminous urine.

Figure 1 shows the kidney as it appeared when removed. The mottled surface and enlarged pelvis are easily observed.

Figure 2 shows a horizontal section through the body of the kidney, the enlarged pelvis, and the beginning of the ureter. This shows the honeycombed condition of the cortex, and the absence of medullary portions, and the large, irregular shaped pelvis.

The test tubes show the amount of albumin of two of the last analyses, representing nearly one-half by volume.

Another case was that of a lad, who died at the age of sixteen of Bright's disease, in whom were no manifest symptoms till a few months before death. He came from a strong, robust Ger-

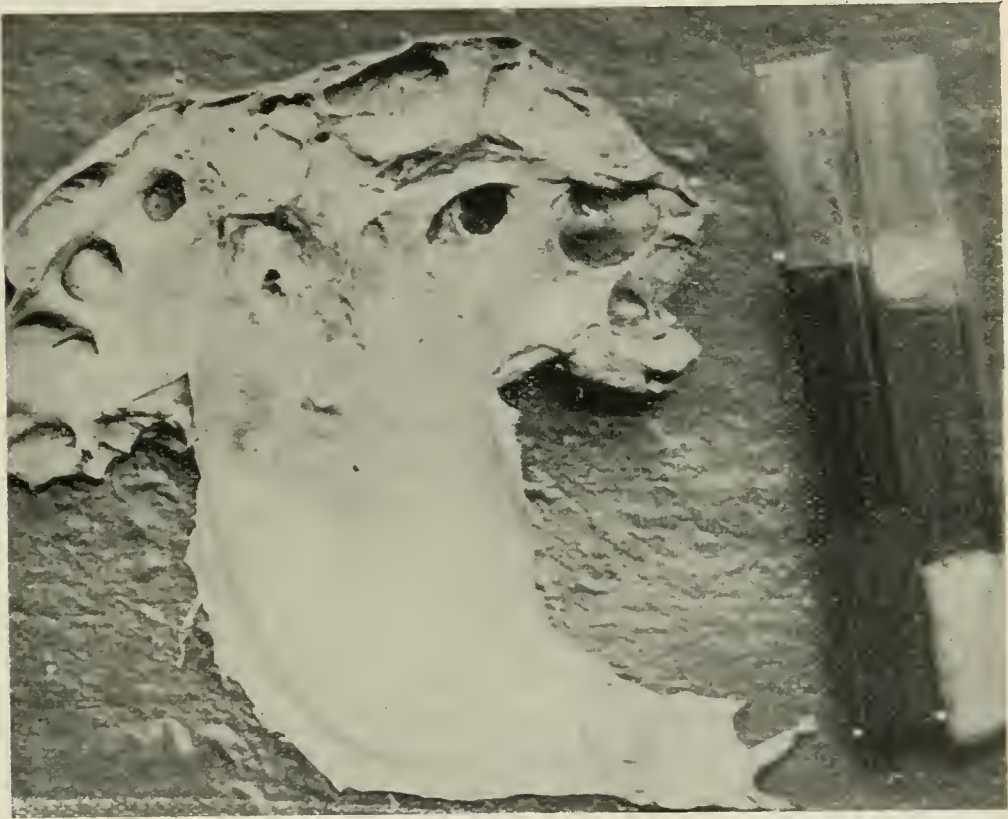


FIG. 2. SECTION OF KIDNEY, SHOWING ENLARGED PELVIS AND HONEYCOMBED APPEARANCE OF CORTX.

man family, and was the fifth of seven children. He was slender, had a precarious appetite, was constipated and of a bilious temperament.

About ten years ago, my associate, Dr. Geo. G. Baker, now of Denver, treated him for what seemed to be obstruction of the bowels. There was icterus, very obstinate constipation, severe retching and vomiting, small rapid pulse, tympanites, and excruciating pain through the abdomen. Repeated doses of morphine hypodermically was the only thing that afforded him relief till a

movement of the bowels was effected, when all pain subsided, and he felt none the worse except very weak. Since then at intervals of one to two years I have treated him for similar attacks, lasting generally two or three days. There were no symptoms manifest to lead one to suspect renal derangement of any sort.

Two years ago he began to emaciate, became sleepless and nervous, and suffered from nocturnal emissions. Suspecting masturbation I relieved him of his redundant prepuce by circumcision, and the result was very satisfactory.

Early last spring he had contracted a light gonorrhea, which was very troublesome. In April he suffered from indigestion, icterus, constipation, which was followed by another of his usual paroxysms of excruciating pain in the stomach and bowels which caused him to draw up his leg against the abdomen. But this time slight convulsive movements were observed once in six or eight hours. Besides he complained of amaurosis and slight occipital headache. While there was no œdema anywhere, and nothing in the appearance of the urine to indicate renal disease, I analyzed a specimen of urine, and to my surprise found an abundance of albumin, amounting to about one-half by volume in the test tube.

He was at once put upon a prescribed diet, with very little medicine, and this *regime* was followed carefully with such modifications as were indicated, for about four months. He made remarkable progress, and the prospect for complete recovery was most flattering. The appetite was good; he gained in weight and strength, and the albumin had disappeared entirely for several weeks. But unfortunately he went into the gymnasium and did violent exercise contrary to prescribed rules, which resulted in a relapse, with an abundance of albumin, uræmia, coma, and death, inside of four days.

No *post-mortem* was permitted.

The question arising in my mind with reference to this case is, as to when did this renal derangement begin? Could such a pathological condition as must have been present here, have been of ten years' duration, and is it possible that these occasional paroxysms which were described above, could have been associated with a uræmic condition? Since the cause and nature were so obscure till far advanced, might not an analysis of the



urine have revealed the secret, and thus possibly have averted this serious consequence?

*Maxims.*—In all cases of diphtheria and the exanthematous diseases, no matter how mild, analyze the urine.

Always when in doubt as to the diagnosis, analyze the urine.

Whether sick or well, make the simple tests for albumin and sugar at least once in six months.

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**Allison, T. M.: Hyperpyrexia in Measles.** (*British Medical Journal.* 1897. No. 1880.)

The author reports the case of a child of fifteen months suffering from whooping-cough and broncho-pneumonia, in whom measles developed. On the night of the first day the temperature rose to 109°.

The patient was cyanotic, restless, and apparently unconscious. The rash had disappeared. The breathing was extremely quick for five or six respirations, and then came a long pause, followed by a struggle to get rid of the bronchial secretion, which threatened to choke her. During respiration, hurried harsh breath sounds were present over the left chest behind, while abundant and moist râles were heard in addition over the right. Both sides were resonant, with the exception of a slight area of dulness at the base of the right lung.

Antifebrin (grs.ijss) was given by the mouth, but as anything swallowed tended to set up an attempt at whooping-cough (seemingly overshadowed by the pulmonary condition), atropine was administered hypodermically, which checked secretion and calmed and regulated the breathing. On now rubbing the body back and front with ice the temperature was brought down, but it quickly went up again to 109.2° in the axilla. Ice was again applied to the body, and as the temperature fell the forehead was seen first to become flushed, and then the characteristic rash of measles followed, and spread slowly down the face, while the moaning of the child showed that consciousness was returning. The general condition became much easier for a time, but the breathing suddenly quickened and stopped, the rash disappeared, and the child expired.

## Clinical Memoranda.

### A CASE OF ENLARGEMENT OF THE PAROTID GLANDS AFTER MUMPS, LASTING FOR SEVEN YEARS.

BY JOHN THOMSON, M.D.,  
Edinburgh.

John M., a rather undergrown lad of 15, was brought to me at the Sick Children's Hospital in February last. He presented a very noticeable swelling in front of and below the ear on each side.



CHRONIC ENLARGEMENT OF THE PAROTID GLANDS,  
SEVEN YEARS AFTER MUMPS.

These swellings were equal in size, uniformly soft and elastic, and not at all tender. They occupied exactly the position of the parotid glands. There was no indication of enlargement of the other salivary glands, and no abnormality of the neighboring lymphatic glands. There was no lack of saliva. The hearing was perfectly good.

His mother stated that when he was about eight years old he had suffered from an attack of mumps, which was prevalent at the time in the locality where he lived. The attack did not differ at the time from that affecting any of the other children, but the swelling never went down in his case; and for seven years it has remained about the same. It has given him no trouble beyond that which is occasioned by the peculiar look which it imparts to his face.

The case appears worthy of being shortly noted, as lasting enlargement of the parotid gland is not mentioned at all in most text-books as a possible after-result of mumps.

## CASES OF ANÆMIA FOLLOWING DIARRHŒA.

BY HENRY A. JOHNSTON, M.D.,

Brooklyn, N. Y.

The anæmia which sometimes follows the diarrhœal diseases is often very difficult to cure. After the diarrhœa has ceased the digestion seems to be weakened and the child does not gain, but remains thin and very pale and anæmic. Its appetite is poor and capricious. Digestion is imperfect and the child does not seem to assimilate what little it does take. Such children are sometimes given cod-liver oil and iron but still fail to gain, and the treatment seems useless. They clearly need iron, but most preparations of iron either disagree with the stomach or seem to do no good. In many cases of this kind no tonic will accomplish much unless the state of the digestion is, also, looked after. By observing two points in these cases I have been successful in relieving anæmia that had before proved obstinate. These two points are to aid the digestion and give a form of iron that is active but, also, easily digested and assimilated. The three following cases were unusually anæmic, but the results of treatment were so good as to lead me to report them:

The first case was a girl thirteen months old who had diarrhœa for five weeks in July and August, 1896. Later in September when I saw her first she was very pale and anæmic; the appetite was poor, and she would take nothing but milk and very little of that. The stools were green and often hard. The child was restless and very cross and slept poorly. I ordered syrup of rhubarb for several nights to move the bowels freely and also five drops of rhubarb and soda mixture after each feeding. As a tonic I ordered one-half teaspoonful of peptomangan, to be given in the milk three times a day. At the end of a week there was a clear improvement to be seen in the child's condition. She began to gain in weight and the color improved rapidly. At the end of a month she was apparently as well as any child except that she had not quite gained her full normal weight. The treatment was continued for a short time longer and she was gradually given a mixed diet.

The second case was a boy two years old, who had a long attack of diarrhœa in August. At first, according to the history, it was dysenteric in character, the stools being composed mostly



of mucus and blood. The diarrhœa stopped gradually and the child became constipated and grew paler and paler, the mother said. Iron had been given but caused vomiting and was stopped. The anæmia was very extreme. I ordered treatment similar to that given to the first case. Ten drops of rhubarb and soda mixture were given after each feeding. This after a little was sufficient to render the bowels rather too loose and the dose was stopped after a part of the feedings. The peptomangan was not as well taken in the milk and was given in water with a few drops of wine added. In that form it was well taken and caused no trouble with the stomach. The improvement in the anæmia was very rapid. The appetite improved at the same time and the child was lost sight of.

The third case was a baby of seven months who had a short attack of diarrhœa three months before I saw it. It was not very sick at that time, but had suffered from constant indigestion since, and had gained very little in weight and had become very pale. Iron and cod-liver oil had been given and both had been persistently vomited. When I first saw it, it was very much emaciated and very anæmic. It was fed irregularly and too often. I put it on a strictly milk diet and reduced the number of feedings and ordered the same treatment of pepto mangan and rhubarb and soda. Improvement was soon marked and continued until the child had completely regained its normal weight and color, and was perfectly well.

Several other cases of similar nature have resulted equally well by correcting the constipation and indigestion, regulating the diet, and at the same time giving iron in this effective and very easily assimilated form.

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#### SYMPATHETIC IRIDO-CYCLITIS WITH REPORT OF A CASE COMING ON THREE WEEKS AFTER ENU- CLEATION OF THE OPPOSITE EYE.\*

BY J. MORRISON RAY, M.D.,

Clinical Professor of Ophthalmology, Otology, and Laryngology in the  
University of Louisville, Louisville, Ky.

On September 22, 1896, I saw a child seven years of age with the following history: The child had a phlyctenular corneal ulcer in the left eye when about two years of age; this healed, leaving

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\* Reported to the Louisville Medico-Chirurgical Society.

a central corneal haze with an irregularity of the cornea and a high myopia. A few days before I saw him he, while at play, dropped a knife through a railroad culvert. He had his face close to the culvert looking for the knife when one of his playmates went beneath to hand it up to him, and in doing so the knife penetrated the eye, producing a wound of the cornea and ciliary body. When I saw him three days afterwards he still had perception of light in that eye, and the other eye being so seriously damaged I was inclined to treat the case expectantly hoping that would eventually be the best eye. I treated him for a week; the eye meantime did very well. Suddenly a purulent ophthalmitis developed, the wound gaped and a mixture of lymph and pus oozed from it which continued for several days, when the eye began to atrophy. Operation was delayed owing to opposition on the part of the mother, but I enucleated the eye on the 18th of October. The little fellow remained here for ten days; vision in the remaining eye was about  $\frac{4}{200}$ . I then allowed him to go home. About a week after he reached home I had a letter from the family physician saying that some kind of inflammation had been going on in the eye for two or three days. The inflammation continued and the little fellow was brought back to me a week ago. He is absolutely blind from an irido-cyclitis, evidently sympathetic in character, coming on nearly three weeks after enucleation of the other eye.

This is the only case in my experience where sympathetic trouble has come on after the other eye has been enucleated. Under ordinary circumstances I would have advised enucleation of the eye at once, but the other being so badly affected the expectant plan was decided upon as being most applicable to the case with the hope that the injured eye might eventually be the best of the two. The fact, however, that this was a child, and that such inflammations are more prone to occur in children should lead us to watch such cases and enucleate early.

In discussing the case Dr. S. G. Dabney said that the first point of interest was that this wound which caused destruction of the eye was in the dangerous zone, as it involved the ciliary region, which was the point most likely to excite trouble in the opposite eye. Second, the injury was inflicted probably with a dirty instrument—an ordinary pocket knife. The same wound made by a shot would have been less dangerous. Third, sym-

pathetic inflammation came on three weeks after removal of the offending eye. His recollection was that there have been cases reported as late as two months, this being the maximum time that had been known, but a period of even three weeks was very rare.

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**Shukowski: Acute Rheumatism in a Nursling.** (*Jahrbuch f. Kinderheilkunde*, B. xlii., H. iii., iv.)

The author describes a case of acute rheumatism in a nursing two months old. The temperature arose to  $39.5^{\circ}\text{C}$ . and the child cried upon the slightest movement. In two days there was a swelling of both talo-crural joints. The skin over the parts was reddened. The next day there was a swelling of the meta-tarsal joints of both great toes.

At the same time was noticed small hemorrhagic areas in the form of petechia, over the body. In a few days the joints of both index fingers, and the left wrist joint commenced to swell. Finally at the end of the second week, both knee joints and the left shoulder became involved. While the process was extending, the parts first involved returned to the normal. The temperature during the illness was irregularly high. The heart remained normal. In one month the recovery was complete with the exception of one immovable nodule on the left shoulder joint. The treatment was with soda, salicylate, salol, and quinine.

**Pfeiffer: Analysis of Mother's Milk.** (*Jahrbuch f. Kinderheilkunde*, B. xli., H. ii.)

From the birth to the fifth month there was a gradual diminution in the proteids and an increase in the quantity of sugar. The amount of fat was found to vary greatly from time to time. The examination of the milk of 169 mothers showed an average of 11.778 solids. The proteid averaged 1.944; fat, 3.107; sugar, 6.303.

**Hare, H. A.: The Value of Digitalis in Organic Valvular Diseases of the Heart in Children.** (*Therapeutic Gazette*, 1897. Vol. xxi., No. 4.)

The author reports the results of communications addressed by him to several practitioners regarding the value of digitalis in heart disease of children. It would seem that the conclusions to be drawn from this collection of individual opinion was in favor of digitalis as a cardiac tonic in the valvular cardiac diseases in children, although the author believes that its use should be cautious and that cases will be more frequently met with in which that drug will fail to act satisfactorily than in the adult.



## Occasional Periscope of Teratology.

BY J. W. BALLANTYNE, M.D., F.R.C.P.E., F.R.S.E.,

Edinburgh.

**Meunier, H.: A Case of Amelia.** (*Bull. de la Soc. anat. de Paris*, 5s., xi., 202, 1897.)

The case of absence of the limbs reported by H. Meunier occurred in the hospital practice of Hutinel. It was that of a child, three days old, weighing 2250 grammes, and perfectly well formed so far as the head and trunk were concerned. All the limbs were absent. In the position of the shoulders were two sessile stumps in which palpation could discover no trace of a brachial skeleton; the glenoid cavity, changed into a spherical prominence, occupied the place of the absent head of the humerus. The scapulo-clavicular girdle was normally articulated. Both the lower limbs were absent; but while on the left side the amely was complete (there being only a fleshy, mamma-like stump), on the right there was a small projection ending in two rudimentary toes with nails. Only a partial *post-mortem* examination was permitted; but it was found that the abdominal viscera and brain and spinal cord were normal. The coxal appendage was photographed by the X rays and afterward dissected: it consisted of five successive parts, the first two of which showed no ossification and were quite atypical, while the three following were slightly ossified and were representatives, doubtless, of the phalanges. In this case neither the idea of amniotic pressure nor that of congenital amputation appeared sufficient to explain the fact that all the four extremities were affected. In order to determine whether the nervous system had any relation to the monstrosity Meunier carefully measured the spinal cord and the gray matter, comparing the measurements with those in a normal infant of the same age. At the level of the cervical enlargement and in the dorsal region the cord of the amelic infant was larger than that of the normal child, while at the level of the lumbar enlargement it was smaller. The gray substance at the level of the cervical and lumbar enlargements, but not in the dorsal region was less in amount in the amelic infant than in the normal, but the differences were slight. The microscopical examinations of the gray substance showed only a slight diminution in the number of motor nerve cells in the case of amely. The

results of these investigations, therefore, were unsatisfactory in that they threw no light on the teratogenesis of the case. The degree of hypertrophy of the gray substance at the points regarded as the trophic centres for the limbs was too little to be the cause of the arrest of development of the four extremities.

The case described above is also reported with greater fulness and with several illustrations by Meunier in the *Nouvelle Iconographic de la Salpêtrière*, x., No. 1., p. 15, 1897. The literature of this particular teratological type, one of the three groups of the division of the ectromelians, is given, from which it would seem that only some thirty instances are known. Meunier divides all the cases into two sub-varieties, complete amelia and incomplete amelia: in the first the deformity is, as it were, perfect in its imperfection, not a trace of the four limbs remains; in the second there is in the position of one or more of the limbs a rudimentary stump containing bone, that is to say *amelia* with a *hemimelic* or *phocomelic* tendency.

**Gasne, G.: A Case of Hemimelia.** (*Nouv. Iconogr. de la Salpêtrière*, x., 31. 1897.)

In the case of a boy, now four years of age, it was noticed at the time of birth that the right hand was rudimentary in a very marked degree. He was a full term child and was born without difficulty. There were no other malformations. The first tooth appeared at the age of three months; and now all the teeth are carious and most of those in the upper jaw have disappeared. The right upper arm is normal; but the forearm is much shortened and carries only the rudiment of a hand. The right forearm and hand measured only 7 cms. in length as compared with 23 cms. on the normal side; the part had a conical form of which the apex was the rudimentary hand, separated from the forearm by a marked circular furrow. The hand, measuring 1 cm. in all directions, carried five small nodules, evidently digits, one of which it was said was provided with a nail at the time of birth. The elbow joint was normal, but the radius and ulna fused into one bone which terminated in a rounded extremity to which the boneless hand was attached. Flexion and extension of the elbow took place normally, but there was neither pronation nor supination and the hand was quite inert and motionless. This child has an elder brother who is healthy and normal; but after his birth and before that of the hemimelic infant the father acquired syphilis and has had hemiplegia of the left side. Gasne

thinks that the cause of the hemimely in this instance was a syphilitic lesion of the spinal cord of the infant commencing in foetal life. The father certainly was suffering from syphilis at the time of the conception of the infant, and it is noteworthy that the paternal syphilis was of the nervous type. The mother, it may be said, has had no abortions, and shows no trace of syphilitic lesions.

**Féré, Ch.: Teratogenic Powers of Hydrocyanic Acid ; The Genesis of Heterotaxy.** (*Compt. Rend. Hebd. Soc. de Biologie*, March 6, 1897.)

Féré has experimentally demonstrated (by injection into the hen's egg before the commencement of incubation), that hydrocyanic acid, like many other poisons, is a potent teratogenic factor. Further he has shown that its power is enormous; with quite a small dose (0.00002) only 10 per cent. of normal developments appeared. As the quantity of the toxic substance is increased the number of normal developments diminishes, but the diminution is not in proportion. Generally also, the more numerous the anomalies are the more serious they are. Further the gravity of the monstrosity coincides with a retardation of the development of the embryos which have escaped becoming teratologic. Even in the most marked cases, however, some embryos develop normally, a fact which illustrates the great doctrine of the individuality of the germ. In the experiments above referred to two of the chicks showed heterotaxy, and Féré uses the occasion to point out that the theory of Fol and Warynski as to the influence of lateral traumatism in the production of this inversion of the embryo is not supported thereby. The determining cause of heterotaxy still remains obscure.

**Féré, Ch.: Experimental Teratomata.**—At the same meeting of the Paris Biological Society at which the results of the teratogenic action of hydrocyanic acid were described, Féré gave the further history of the tumors which he succeeded a year ago in producing artificially by the engrafting of pieces of the blastoderm. The teratomata have been noteworthy on account of their persistence; none of them has yet been absorbed. Several after enlarging, have shown absorption of their fluid portion and have become masses of metallic hardness. The age of the blastodermata when engrafted was about forty-eight hours.



# ARCHIVES OF PEDIATRICS.

DEVOTED TO THE  
DISEASES OF INFANTS AND CHILDREN.

AUGUST, 1897.

Edited by FLOYD M. CRANDALL, M.D.,  
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## THE OBJECTIONS TO CONDENSED MILK AS AN INFANT FOOD.

It is self-evident that the best standard by which an infant's diet can be judged is the infant's normal food—breast milk. It is not alleged by any one that breast milk is always of exactly the same composition, or that it can be exactly duplicated by any artificial food, or that the stomach of the average child has no power of adapting itself to variations in food. But the composition of average breast milk is well-known and any food which varies widely from its proportions, with very little other evidence against it, must be condemned. If we know that a given food contains but one-eighth the amount of fat and one-third the amount of proteid found in normal breast milk, we can reach but one conclusion regarding it—that food is not suitable for continuous use. Yet these are the proportions of a one-in-twelve dilution of condensed milk. If made twice that strength, the solution contains but one-fourth the proper amount of fat, but at the same time an excess of sugar, the greater part being cane sugar. As a matter of fact, but few infants will digest condensed milk in a one-in-six dilution. It is rarely given in actual practice in a dilution of less than one-in-twelve. The objections to condensed milk as an article of infant diet were pointed out very clearly by Dr. Kerley in a paper recently read

before the Pediatric Section of the American Medical Association, an abstract of which will be found in this number.

No rational physician can believe that a food of such strength can form a proper diet for continuous use in any but the youngest infants. If farther evidence were needed, the clinical experience of men who see large numbers of children, is available. So far as we know no careful observer of large experience advocates the use of condensed milk alone, because children do not thrive on it. It is quite true that there are exceptions to this as to most rules, but it is folly to base one's practice upon a few exceptions rather than the rule. Dr. Holt, with his immense experience, says that he has as yet never seen a child reared exclusively on condensed milk who did not show, on careful examination, more or less evidence of rickets. Dr. Rotch is equally positive in his statements.

The number of children over four months of age fed exclusively on condensed milk, who show no sign of rickets or malnutrition, is extremely rare. They are frequently fat, to be sure, but they commonly present striking examples of "fat rickets." As a rule they well fulfil Dr. Kerley's description of them as an "ill conditioned class of children, with their starved muscular and nervous systems, and catarrhal tendencies, who fall an easy prey to broncho-pneumonia in the winter and to the gastro-intestinal diseases in the summer, and to the infectious diseases during the entire year." As regards well nourished children who have been reared exclusively on condensed milk, Dr. Kerley aptly remarks that "we hear of more than we see."

The chief objection to condensed milk as an infant food is the fact that it contains a slight deficiency of proteids and an excessive and almost fatal deficiency of fat.

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#### THE USES AND LIMITATIONS OF CONDENSED MILK AS AN INFANT FOOD.

If condensed milk is an improper food for infants, is it so irreparably bad that it cannot be changed or fortified so as to render it a desirable food? We would say that it cannot be

made a desirable food; it may be made permissible. In many cases it is the only available food, and in some cases the most desirable that can be obtained. While granting this, we do not in the slightest degree advise its use when a better food can be secured. It is certainly a fact that the practitioner is sometimes obliged to use it. This occasionally occurs through obstinate persistency on the part of parents, but more commonly among the extreme poor, who cannot afford a more expensive food.

As the chief objections to condensed milk as an infant food are its deficiency in fat and proteids, two changes must be made to render it suitable for use: fat and proteid must be added. As the absence of fat is the greater defect of the two, it must receive chief attention. This deficiency may be corrected by the addition of cream—an impossibility among the very poor. If cream is not available we may resort to cod-liver oil as suggested by Dr. Kerley. It is an excellent substitute and must be regarded as a food rather than a medicine, and must be given continuously, though the daily amount need not be large. The device of using a meat broth as suggested by Dr. Kerley for securing the proteid is an excellent one. As an occasional substitute for the broth, egg albumen may be utilized to supply the necessary nitrogen. The white of an egg may be thoroughly beaten up with the water with which the condensed milk is diluted. The chief objection to this plan is the difficulty of determining the proper proportions to be employed.

By thus modifying condensed milk a child may frequently be carried with fair success to the ninth month. His chances, however, of reaching that age without rickets will be far better with fresh cow's milk.

One advantage, it must be acknowledged, in the use of condensed milk is the fact that the child is less liable to be fed with an over strong mixture than when fresh milk is used. One of the most frequent and serious errors in infant feeding is over feeding. The fact that children do no worse on these excessively weak condensed milk mixtures is but one of many proofs



that they commonly receive more food than they require. If the doctor who is wedded to the exclusive use of condensed milk would not make his fresh milk mixtures four to six times as strong as his condensed milk mixture he would be much better satisfied with fresh milk.

In deciding upon the value of a given food, the physician should not fix his attention upon the present so closely as to entirely forget the future. He should consider the remote, as well as the immediate effects of the diet. His office is not alone to tide over a few months and keep a baby quiet at any hazard, but to lay the foundation for strong and vigorous childhood. He will fail to accomplish this if he prescribes a food lacking in its essential elements, though the child may for a few months seem to digest it more readily.

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We are pleased to present in the present number a Periscope on Teratology by Dr. Ballantyne and to promise another in November. These articles are of particular interest, as the cases reported are all from foreign journals, many having first appeared in languages which render them inaccessible to the average American reader. The subject is an important one and its study of recent years has added greatly to our knowledge, not only of anomalies and abnormalities, but also of the normal infant. Dr. Ballantyne is known the world over as the most competent living authority on teratology, to the study of which he has devoted a vast amount of time and energy.

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Dolinsky reports the case of a new-born child that died suddenly, in which he discovered at the autopsy great hypertrophy of the thymus. It measured three and half inches in length, nearly three in breadth, and nearly one inch in thickness. The child weighed over six and half pounds. No other cause of death could be detected, and the enlarged gland had probably compressed the trachea when the head was thrown backwards.

## Bibliography.

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**Some Aspects of Infantile Syphilis; being the Hunterian Lectures delivered at the Royal College of Surgeons in 1896.** By **J. A. Coutts, M.B. (Cantab.), M.R.C.P.,** *formerly Professor at the College; Physician to the East London Hospital for Children.* London: Rivington, Percival & Co. 1897. Pp. l., 130. Price, 3s. 6d.

This little work deals with only a limited portion of a very extensive subject. The portion of the field covered, however, is so admirably done that one lays the book down with regret that the author has not been able to attempt a broader portion of it. In the first lecture the parental sources of the disease are discussed. The author is exact and positive in his belief and has a most convincing way of enforcing his opinions. In the second lecture symptomatology is considered in an altogether admirable manner. In the third lecture lesions of the osseous system are first discussed. The latter part of the lecture is devoted to a consideration of the transmission of syphilis by those who suffer from it by inheritance. The author believes that such transmission is rare, and that the virulence of contagion of inherited syphilis has been vastly exaggerated. The chapter closes with some admirable observations on Colles' Law.

**Diseases of the Ear, Nose, and Throat, and their Accessory Cavities. A Condensed Text-Book.** By **Seth Scott Bishop, M.D., LL.D.,** *Professor in the Chicago Post-Graduate Medical School and Hospital. Illustrated with 100 colored lithographs and 168 additional illustrations.* Philadelphia and New York: The F. A. Davis Co. Pp. xvi., 496. Price, \$4.00.

This is in most respects a very commendable work, both in subject matter and illustrations. It differs from most works on the subject in that it enters very extensively upon a consideration of diphtheria and the antitoxin treatment. Unusual attention is also given to mastoid disease, hay fever, and adenoid growths. The review of the subject of antitoxin treatment is very complete. It is, however, evidence that has been given so repeatedly that it is old, and hardly seems in place in a work of this character. After a review of the evidence, the author concludes: "While the serum is a powerful remedy, and may be capable of doing harm, the disease itself is so virulent that, in view of the great weight of testimony and statistics in favor of antitoxin, the physician should not fail to avail himself of this addition to thorough local and general treatment." Croup and intubation also receive extended notice, the chapters on those subjects being on the whole very satisfactory.

## Society Reports.

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### THE PHILADELPHIA PEDIATRIC SOCIETY.

Meeting of June 8, 1897.

J. P. CROZER GRIFFITH, M.D., PRESIDENT.

CONGENITAL MALFORMATION OF THE RECTUM WITH THE REPORT OF A CURIOUS CASE.—This case was presented by Dr. Ellwood R. Kirby.

The rectum and the anus, like other portions of the human anatomy, are liable to malformations and imperfections. Some of these vices of conformation are by no means uncommon; many of them are remediable, and as they generally admit of no delay in their treatment, a knowledge of all the medical and surgical measures which experience has decided to be best adapted to remedy each particular deformity, is of the utmost importance to every physician and accoucheur.

No obstetrician should ever neglect the important duty of examining minutely every infant immediately after birth and for a day or two subsequently, to ascertain without a doubt, the presence of an anal aperture; that the canal for some distance above is pervious, and that the parts perform their normal function.

As to the frequency, Collins found one case in 16,645 children born in the Rotunda at Dublin, and Löhrer of Vienna two cases in 50,000.

The mortuary statistics of the city of Brooklyn from 1891 to 1895 show that during that time twenty-five children died within a few days after birth from complete congenital imperforation of rectum or anus. During this same period there were 90,180 births recorded, but it is the opinion of the registrar that not more than half of the actual births are recorded. Accepting his estimate as correct, the proportion of cases would be one to every 7,200 births. Notwithstanding these statements, I am of the opinion that these malformations are of much more frequent occurrence than is generally conceded, and that many children born with such defects are suffered to perish for want of proper and timely surgical assistance.

With regard to the primary cause which determines these



and other congenital vices, nothing of a definite character has as yet been ascertained, and the subject still remains a problem for future organologists to solve.

There are some malformations which do not depend upon an arrest of development, but are the result of intra-uterine diseases. The narrowing and contraction of the anus, with more or less thickening of the integument, is the result of an anal inflammation. Peritonitis may occur during the life of the foetus, and, giving rise to intestinal adhesions, occasion malformations. All deformities about the rectum may be conveniently arranged under seven headings:

1. Congenital narrowing of the anus or rectum, without complete occlusion.—The anal aperture is at times preternaturally small, either in consequence of a contraction of the lower end of the rectum, or from the fact that the skin may extend occasionally over the border of the anal margin. The outlet may be sufficiently large as to permit the meconium to drain away, or so small that the escape of excrementitious matter is impossible. The symptoms when prominent will be vomiting and abdominal distension; when slight some constipation and difficulty in voiding the fæces. The diagnosis is usually easy, for the contraction is near the anus and can be readily detected by the finger, or seen when due to a fold of skin extending across the anus. The treatment consists in dividing the ring or skin on the dorsum, and daily dilatation, either with the finger or soft rubber bougie.

2. Closing of the anus by a membranous diaphragm (atresia of the anus).—The membrane in these cases may be of greater or less firmness and thickness, and may be composed of skin or mucous membrane. It is sometimes so thin as to bulge with meconium when the child coughs or strains, and has been known to rupture spontaneously. This is the simplest of all forms of congenital malformations, but unfortunately the rarest. It is easily diagnosed by simple inspection of the parts, and the treatment consists in making a crucial incision through the membrane.

3. Imperforate rectum.—In this class one may expect to find some of the most difficult cases of malformation, although some are comparatively simple. Instead of a normal anus the skin of the perineum extends across the anal region from side to side, and the rectum may terminate quite a distance from the normal

site of the anus. The intervening space may be made up of connective tissue, while a circular elevation or depression marks the normal site of the anus. Occasionally a distinct fibrous cord may be traced from the rectal pouch to the skin. If the rectal pouch be not at too great a distance from the skin a sense of fluctuation may be felt by firm pressure of one finger over the anus and the hand over the abdomen.

4. Imperforate rectum with a normal anus.—The septum which separates the anal and rectal pouches in these cases is generally within easy reach of the anus, and may be so thin as to permit a sense of fluctuation. In most cases, however, the septum is thick and composed of cellular or fibrous tissue, lined both above and below by mucous membrane. It may be perforated like the hymen and allow the slow dribbling of meconium. There may be also more than one septum. Voillemier reports a case in which the rectum was divided into four distinct compartments. There is usually but little difficulty in the diagnosis of these cases, but the danger lies in the fact, that the presence of a normal anus is apt to allay suspicion as to the true nature of the difficulty.

5. The anus may be absent and the rectum open at any point in the perineum or sacral region. The lower portion of the rectum in these cases is usually of a fistulous character, lined by true mucous membrane, and the abnormal anus is always narrow and insufficient for its purpose. Occasionally the rectum terminates in two distinct openings, at a greater or less distance from each other.

6. The anus may be absent and the rectum terminate in the bladder, urethra, or vagina. In the females the vaginal opening is the most common; in males the bladder opening is the most common. This condition is usually rapidly fatal unless relieved by prompt surgical interference.

7. The rectum or the large intestine may be entirely absent. The case I wish to report was a child three days old which I saw in consultation with Dr. O'Malley. Nothing had escaped from the anus, the abdomen was greatly distended, and the child refused to nurse. An examination of the case showed a normal anus with a membranous diaphragm (atresia of the anus). There was no bulging, and nothing to indicate the presence of meconium above this membrane.

We divided this membrane by a crucial incision and the

finger passed readily into the bowel. I thoroughly dilated this portion of the bowel and waited a few minutes to see if any of the meconium came away. Nothing came. This rather surprised me, and I again introduced my index finger, and discovered that the canal ended in a blind pouch. Careful palpation failed to relieve the rectal end of the pouch at three and one-half inches. The question then arose as to the propriety of dissecting up the perineum and hunting for the rectal end of the pouch. But as we could not locate the upper pouch I did not think it proper to subject the child to the great dangers of an extensive resection of the sacrum.

As a last resort I finally did a Maydl's colotomy, and after a great deal of trouble succeeded in finding a portion of colon in front of the left kidney, and stitched it to the abdominal incision. I opened the colon immediately and removed a large quantity of inspissated meconium. The child was then put to bed and freely stimulated, but only survived the operation twelve hours. I was unable to map out the exact anatomical arrangement of the pouches through the very small abdominal incision. A *post-mortem* was refused.

As to the general treatment of these cases the following rules may be considered:

1. An operation should always be performed, and performed without delay.
2. If there be any chance of establishing an opening at the normal site of the anus, the surgeon should at first direct his attention to this procedure.
3. The use of a trocar as an aid in finding the rectal pouch before or after incision through the perineum, is not sanctioned by modern surgical authority.
4. The results of attempts to establish an outlet for an imperforate rectum through the perineum, are not favorable as regards the production of a useful anus.
5. In case of failure to establish a new anus in the anal region, colotomy should at once be performed.
6. In the formation of an artificial anus the left groin is the best site for the operation.
7. Attempts at establishing an anus in the anal region after a colotomy, are attended with great danger, and are generally unsuccessful.



## DISCUSSION.

DR. GIBBON.—I assisted in a case of this kind last winter. The patient was a female child. There was no bulging nor pitting at the part of the perineum where you would expect the anus to be. Incision was made in the median line and the rectum found about an inch from the skin. On pressure upon the lower end of the pouch it was found that fæcal matter came out through the vagina. Digital examination revealed a very minute opening large enough to admit probe, very high up in the vagina. The incision was then enlarged, the lower end of the bowel was dissected out of the vagina and brought down into normal position. The child recovered.

DR. JOPSON.—I saw one case in the service of Dr. John Ashhurst, Jr., at the Children's Hospital during the past winter which was very much like that described by Dr. Gibbon. It was a female child and the rectum opened into the vagina. The child was not at all in a desperate condition. It was, however, deemed advisable to perform the operation at once. No anæsthetic was used. A curved grooved director was passed into the rectum through the fistulous opening and cut down upon in the perineum, and the rectum was found without trouble comparatively near to the perineum; it was brought down, the skin stitched to the mucous membrane, and the opening into the vagina left unclosed. We had considerable difficulty in keeping the opening patulous, but it gradually healed up satisfactorily and an opening of good size was obtained. There seemed to be some sphincter action when I last examined the patient: although there is still a small opening into the vagina, the child discharges most of the fæcal matter through the opening in the perineum.

DR. W. S. NEWCOMET.—I once saw a curious case in a child five months old. The mother gave a history of its having had two anal openings, one the larger, and one about three-fourths of an inch back of this, from which only little fæces escaped. When I saw the child all that was left was a small pit of about a quarter of an inch in diameter of pigmented skin, which appeared very much like another anus, although I could not insert a very fine probe. The child then had profuse diarrhœa but did not use this second anus at all. Two months later the child had another attack of diarrhœa, and was taken to another hospital where it died. The parents would not permit a *post-mortem*.

DR. MARY E. ALLEN.—I at one time had in my practice a child with an anus opening into the vagina. The anus that opened into the vagina was very small. The child died suddenly with meningeal symptoms.

DR. C. J. HOBAN.—Some ten years ago I had a case in which a considerable period elapsed between birth of child and the time I saw it. I found on examination the rectum ended in a

pouch one-half inch from the anus. Operation was refused, but the child went on three weeks, nursing all the time, without any vomiting whatever. At the end of three weeks the pain became so distressing on account of dyspnœa and pressure of the bowels on the diaphragm that operation was permitted and I performed posterior colotomy and found the bowels imperforate. I sewed up the wound and performed inguinal colotomy. Fæces escaped and the child lived about three days.

DR. KIRBY.—I think in those cases in which the rectum opens into the vagina it is perfectly proper to make an opening through the perineum, and if necessary resect the sacrum, and endeavor to restore the continuity of the bowel in that way. Usually the end of the malformed rectum is within one and one-half or two inches of the skin, and of course the fistulous opening naturally acts as a guide. In true imperforate rectum, unless you can feel the lower end of the pouch at a reasonable distance, it is much better to do an inguinal colotomy, rather than grope blindly through the perineum.

#### STIGMATA OF DEGENERATION IN EPILEPSY.

DR. A. FERREE WITMER read a paper upon this subject, of which the following is an abstract:

There were various findings in patients at the Pennsylvania Epileptic Hospital and Colony Farm, and were classified under three headings, *viz.*:

- (a) Morphologic deviations from normal.
- (b) Functional deviations from normal.
- (c) Purely psychic stigmata.

Under heading (a), the stigmata particularly marked were asymmetries of the skull and face, dental anomalies, inflammations of the skin, and marked pallor independent of any organic diseases.

Under heading (b), were noted retarded puberty, various anomalies of the menstrual function, gluttony, merycismus.

Under heading (c) tests were made to determine the higher mental activities, such as attention, memory, and association. Each patient was requested to write as many words as possible in one, two, and five minute periods respectively; also to write from memory a spoken, written and a simple sentence when read; and lastly to write the associations of some familiar word (city, hospital, etc.). The results indicated a deficiency of mental activity when compared with groups of healthy children of equal age.

DR. J. P. CROZER GRIFFITH.—I would like to ask Dr. Witmer whether the defects to which he refers, particularly the mental stigmata, he would consider in any way *characteristic* of epilepsy, or whether they might not occur in many mental affections, such as, in certain instances, may be produced perhaps by epilepsy. I have been interested in noticing the well-known slow-

ness in learning to walk in very many mentally deficient children, whether or not they had epilepsy. I have been looking carefully, too, into the condition of high arched vault of the palate, which has been sometimes described as characteristic of the idiot, but without ever being able to convince myself that idiots were subject to this any more than other children.

DR. MARY E. ALLEN.—It seems to me that some of these mental defects may be caused by the medicines which are taken. One epileptic patient of mine had taken bromide for some time; the mental condition had grown worse and worse. I reduced the bromide, and gave her salicylic acid, or sometimes salol or salicylate of sodium, and she became so much brighter mentally that she was able to write and remember things as she had not done for several years before.

DR. WITMER.—The psychology of epilepsy is yet obscure. It will probably be known shortly whether there is an actual psychology of the disease, or whether the mental defects found in the disease stimulate those found in other defects of which Dr. Griffith has spoken. As to whether the drug treatment of the disease could cause these peculiar mental defects, I should be rather inclined to think that it could. I have known cases in which the bromide has caused maniacal excitement, but I hardly believe in the cases we have under our care that such could be the cause, as they have not received any bromide for a period of four months.

DR. W. S. NEWCOMET read a paper entitled Angioneurotic Edema in Children.

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**An Antiseptic and Protective Dusting Powder.**—A dusting powder for general use in surgery must embody the following essentials: It must possess positive antiseptic powers, must not cake with secretions, and must be innocuous, unirritating, and of an agreeable odor. Taking advantage of the need for such a remedy, chemists have vied with each other in originating drugs which were supposed to possess these properties. Most of them, however, were not found to withstand the crucial test of chemical experience. One of the exceptions to this rule is aristol, some of the uses of which are described by Dr. T. Bates in the *Daily Lancet*. The remedy is yet in comparative infancy and much is yet to be learned as to its application. In traumatism, he has succeeded particularly well in its use. In catarrhal troubles of either throat or nose it gave phenomenal cures. In indolent ulcers by filling the cavity with the powder excellent results were secured. The powder is so impalpable as to penetrate much more completely than iodoform, which, being heavier and not so dry, cannot be driven into the convolutions of surface so readily as aristol. In tonsillitis he was particularly much pleased with its action. By throwing it into the throat with a blower, and having the nurse mop it occasionally with an ointment of one to ten he found the tumefaction, pain and restlessness to readily disappear.



## Current Literature.

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### HYGIENE AND THERAPEUTICS.

**Kerley, Charles G. : Condensed Milk : Its Uses and Limitations in Infant Feeding.** (*Medical News.* 1897. Vol. lxx. No. 23.)

In considering the value of any artificial food for infants, we must be governed by one standard—that of mother's milk, the nourishment the child has a right to expect.

An analysis of mother's milk shows that it contains from  $3\frac{1}{2}$  to 4 per cent. of fats, 2 per cent. of proteids, and 7 per cent. of sugar. The analysis of a condensed milk mixture, when diluted for use in the proportion of one part in six of water, gives us 1 per cent. of fat, 1.2 per cent. of proteids, and 8 per cent. of sugar, a greater part of the latter being cane sugar. It is extremely rare, however, that we meet with a child that is being fed on so strong a mixture, for the reason that it will almost surely produce colic and indigestion. The condensed-milk-fed children, as a rule, receive a mixture diluted to one-in-twelve or one-in-fourteen. The one-in-twelve dilution gives a mixture containing 0.5 per cent. of fat, 0.6 per cent. of proteids, and 4 per cent. of sugar. Comparing this with breast milk, it may readily be seen how inefficient it must be for a permanent diet. Even if the one-in-six dilution is given, it will still be inadequate.

Apparent as the shortcomings are, many children will do comparatively well in very early life on the weaker dilutions, that is, one-in-twelve or one-in-fourteen. There is sufficient of carbohydrate to produce heat, and the proteids, though small in quantity, furnish the requisite amount of nitrogen. Many thrive on the canned milk diluted one-in-twelve, until the third month; then the demand for the system exceeds the supply of fat and proteids. If the diet is continued, rickets and malnutrition of varying degree will almost always follow.

Of the many hundred marasmic and rhachitic infants that the author has observed he believes that fully 95 per cent. had been fed on the meal foods or on canned condensed milk, chiefly the latter. Notwithstanding this, we occasionally meet with children that have been fed exclusively on condensed milk up to the ninth or tenth month, and that have thriven fairly

well. They will usually present some evidences of bone rachitis, although the development otherwise will apparently be normal. These infants are held up to us as evidences of the value of the diet in question, and we hear of a great many more than we see. These isolated instances are to be explained by the fact that there are a few infants whose adaptation to abnormal conditions is so great that they cannot be injured by ordinary improper feeding.

Notwithstanding its many disadvantages, regarding which the author is very positive in his statements, he says that he is compelled to give it to many children every year. He uses it chiefly among the very poor, the ignorant and the careless, who bring their children to the dispensary. The very poor cannot afford cow's milk at six or eight cents a quart, neither can they buy refrigerators and ice to properly keep the milk. The ignorant cannot appreciate and do not follow out instructions as to the diluting and care of the milk. We also sometimes find among the better class of patients those who absolutely insist on feeding condensed milk against our wishes. Hence it is that our only resource the year round with many infants is the sweetened canned condensed milk. It is inexpensive, it will keep sweet several days in hot weather without ice, on account of the added amount of cane sugar, and it is easy of administration.

Having this preparation with its imperfections forced upon us, how are we to use it? We must supply to the condensed-milk-fed infant the deficient amounts of fat and proteids. If the parents of the patient are well-to-do, cream may be added in proper proportion to make up the requisite amount of fat. Among dispensary patients, cod-liver oil supplies the deficiency. The dose must vary according to the age, the ability of the child to digest it, and the season of the year. The author prescribes from ten drops to a dessertspoonful, three or four times daily after feeding. As a rule it is taken readily. During the very hot weather the dose must be reduced or the oil discontinued if there are evidences of gastro-intestinal disturbance.

The proportion of proteids will still be low, but they may be increased by adding the condensed milk to a meat broth. One pound of lean beef is boiled in one quart of water until the liquid is reduced to one pint. It matters little what portion of the animal is selected so long as lean muscle-fiber is used. The

broth prepared in this way, according to the analysis of J. S. Adriance, of New York City, contains 0.8 of 1 per cent. of proteids; so that if one part of condensed milk is added to twelve of broth, the mixture will contain 0.5 per cent. of fat, 1.4 per cent. of proteids, and 4 per cent. of sugar. This will answer for a child three months of age. Fat is supplied by the use of cod-liver oil. When the sixth month is reached, one part of condensed milk may be added to nine of broth. The percentages then will be, approximately, .75 per cent. of fat, 1.7 per cent. of proteids, and 5 per cent. of sugar. This, with cod-liver oil, will answer until the eight or ninth month, when the critical nursing period will have been passed and barley and oatmeal gruel, with other meal mixtures, may be allowed.

The conclusions reached are as follows:

1. In the artificial feeding of infants, always determine as exactly as possible the percentages of the food constituents.
2. Condensed milk alone is an indifferent substitute for mother's milk, no matter what the age of the infant may be.
3. Condensed milk alone should not be given after the third month.
4. Condensed milk, fortified, may be made an acceptable diet for infants; alone, it is a food upon which a certain number of children exist until age or changed conditions allow of a better diet; and inasmuch as there is nothing to take its place among the very poor, its value to them is inestimable.

**Gordon, A. Knyvett: Scarlet Fever Treated by Anti-streptococcic Serum.** (*The Lancet.* 1897. No. 3827.)

The patient was a boy six years of age who was admitted to the South-Eastern Fever Hospital, ill with scarlet fever. The description of the case shows the disease to have been clearly septic. Cultures from the throat showed streptococci and staphylococci, but no bacilli. Ten c.c. of the *serum antistreptococcique* of the Institute Pasteur were injected under the skin of the abdomen at 5 P.M. The brandy which was already being administered was increased. Up to this time the child was growing steadily worse. There being some improvement apparent on the following day at noon another 10 c.c. of the serum was given.

On the following day the temperature had fallen to 99.5°; fauces were clean and not offensive; there was very slight



swelling; the pulse was 96 and of much better tension. There was no urticaria, the scarlet rash was fading, and there was free desquamation. On the 23d the temperature was 98° and the child was intelligent, answering questions, and hungry.

This case has seemed to the author to be worth publishing on account of the rapidity with which the improvement followed the administration of the serum. On admission the child seemed moribund, but he rallied from the effects of the journey in the ambulance and commenced to improve a little till the seventh day of the disease; then he grew rapidly worse and was to all appearances dying from septicæmia. He was semi-comatose, with a failing heart, dusky rash, and diarrhœa. After one dose he rallied, and after the second a rapid improvement took place and was maintained, his convalescence occurring very much sooner than is usually the case with patients who have had any septic symptoms.

With regard to the indications for the use of the serum in scarlet fever, the author suggests that it would be valuable in any case that becomes septic, whether the signs exist from the first and are not in proportion to the severity of the throat symptoms—as in this case, where the throat was not severely affected—or whether the condition is due to absorption from a sloughing throat or nose—the more common occurrence. In the latter case improvement often begins when the throat is vigorously attacked by constant swabbing with chlorinated soda or some other germicide, but nothing has much effect when there is septicæmia with a moderately severe or even a mild throat. In this case the only drug given was brandy, and it is not probable that the remarkable improvement could be attributed to the stimulant only.

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#### MEDICINE.

**MacCoy, Geo. T.: A Review of the Recent Epidemic of Diphtheria in Columbus, Ind.** (*Indiana Medical Journal*. 1897. Vol. xv. No. 12.)

The author reports the occurrence of an epidemic during August and September of the past year. Diphtheria spread over the southern part of the State in a steady, wave-like manner. It made its appearance in Columbus on August 14th, the first case being well marked naso-pharyngeal diphtheria. This case

was quarantined at once; there were no exposures, and no one contracted the disease from it, no other cases occurring in that part of the city, and as soon as the patient was well enough the family moved out of town. There were no other cases until August 24th, but from this date to the 31st sixteen cases developed, not one of them seeming to have any connection with any other case. From this time the epidemic steadily increased, in spite of every effort to check it. During the month of September sixty-five cases developed in the city, and it prevailed extensively in the surrounding country.

The following is an outline of the general management: Upon receipt of information at the health office of a case of suspicious sore throat, the author, as health officer, immediately visited and carefully examined the case. If it was thought to be contagious, or was doubtful, strict precautions against the spread of the disease were taken at once. The patient was isolated and explicit instructions for the care of the room and the protection of other members of the family were given. Whenever possible other children of the family were sent away from home. The patient was placed in a clean, light and well-ventilated room (upper rooms being preferred), and all unnecessary articles of furniture were removed. One person was selected for nurse and no other allowed to enter the room, the nurse wearing an outside wrapper, which was removed if it became necessary to leave the room. The plan recommended by J. Lewis Smith for purifying the atmosphere by the use of oil of eucalyptus, carbolic acid, and turpentine was tried, but was finally abandoned, as it was proven to be unreliable. Stone jars holding from two to five gallons were placed in the room or adjoining closet and filled with solutions of chlorinated lime, bichloride of mercury or other disinfectants, and all dishes, vessels, knives, spoons, etc., were dipped in the disinfectant solution before removing them from the room. Cloths were used to receive the discharges from the throat and nose, and immediately burned. Urine and fæces were disinfected before removing from the room. All bed linen or clothing was first immersed in the disinfectant solution and then boiled.

Printed copies of the law governing quarantine, health circulars giving advice for preventing the spread of diphtheria, and for disinfection were left with the family. Quarantine was absolute, no one but the physician being allowed to enter or leave the

premises, and the house was flagged. The wants of the family were looked after by the sanitary police, whose duty it was to visit each quarantined family each day and as much oftener as required. By this arrangement, and the aid of telephonic communication, each family was well looked after, the hardship of quarantine was scarcely felt, and there was no excuse for any other communication with the outside world. Where families needed assistance from the Township Trustee it was rendered through the medium of the health officer and the sanitary police. No one complained for lack of attention. After the death or recovery of the patient, the premises were disinfected according to the rules of the State Board of Health.

Funerals were strictly private, and always within twelve hours. Undertakers were not allowed to use cooling boards, neither cabs nor hacks of any kind to carry dead bodies, and the preparation of the body for burial had to conform to the rules specified by the local Board of Health in every instance. A clean bill of health was not issued in any case before the end of the third week, and the patients were always carefully examined before releasing them from quarantine.

While the schools were in session daily examinations of pupils' throats were made. The teachers were carefully instructed how to do this. Wooden spatulas were used for depressing the tongue when necessary, and when so used were immediately burned. Every case of inflamed or reddened sore throat was promptly sent home, and the name and address of the pupil sent to the health office. No pupil was allowed to return to school without a certificate from its family physician, approved by the health officer. Children from families where any kind of sore throat existed were not allowed to attend school, and no sick children from any cause allowed to remain in school. School-rooms were thoroughly disinfected each week; slates abolished; desks, pencils, banisters, etc., were washed in solutions of chlorinated lime; books were not taken away from the school-rooms; circulating libraries were closed.

Early in the epidemic the author learned that many otherwise excellent physicians had very little knowledge of disinfection, and that the people could not be trusted to carry out the instructions of the attending physicians. For this reason he assumed charge of sanitary matters and strictly carried them out, always being careful not to interfere in the least, by word or act,



with the work of the attending physician, and with but one exception, there was perfect harmony between the physician and the health officer. A health officer can do his whole duty and never meddle with the affairs of any other physician.

The political campaign then in progress was a potent means of causing a spread of the epidemic. With the throng upon the streets and in crowded halls, each political rally was followed by a fresh outbreak of the disease. After the presidential election, and the disappearance of the crowds, the epidemic steadily declined. There was a total of 190 cases reported, not including atypical or anomalous cases.

A discussion of treatment the author believes to be out of place before a body of sanitarians, but at the present time a paper upon the subject of diphtheria that does not mention antitoxin would be disappointing. Owing to the bitter opposition to the use of antitoxin that existed in Columbus in the beginning of the epidemic, permission to use it could not be obtained, except in the gravest cases, and only then as a last resort. This prejudice was largely removed before the end of the epidemic. Still antitoxin was not used as a remedy except in cases that were unusually severe. Antitoxin was administered to fifty-two cases, many of them considered hopeless as far as any other treatment was concerned, all of them severe.

Of these fifty-two cases, nine died, a mortality of 17.3 per cent. Five of the nine deaths occurred in less than twenty-four hours, and three deaths under six hours. Deducting these moribund cases, we have four deaths remaining, a mortality of 8.5 per cent. In *none* of the nine fatal cases was antitoxin injected prior to the fifth day. In forty-two cases injected prior to the fifth day all recovered. There were no disagreeable sequels following its use; no cases of reinfection, and no case of croup developed after its use. Nine laryngeal cases were injected, with five deaths resulting, a mortality of 55 per cent; in seven laryngeal cases not injected, all died, a mortality of 100 per cent. Besides these fifty-two cases the author furnished antitoxin for use in nineteen cases outside of the city, with one death, and that in six hours after injection and the sixth day of the disease. These facts, the author believes, need no comment, as they teach their own lesson.

Of the nine fatal cases, an unfavorable prognosis was given at the time of injection in all. Seven were considered hopeless

as far as any other treatment was concerned. One lived one week after injection and died from a pre-existing heart lesion of two or more years' duration, and one was a case of reinfection injected on the sixth day of the second invasion.

Mulford's antitoxin was used and in the following amounts: In six fatal cases 1000 units were used in each case, in two fatal cases 2000 units were used in each case, in one fatal case 800 units only were used. In the cases that recovered, from 1000 to 2500 units was used in each case.

**Buss : Acute Angina and Acute Articular Rheumatism.**  
(*Archives f. Kinderheilkunde*, B. xx., H. iv., v.)

The author reports a great number of cases which prove the connection that exists between angina and acute articular rheumatism. He has noticed that angina and rheumatism repeatedly appear at nearly the same time in the same family, but among different members. He has also observed that during or shortly after an attack of angina, the patient develops articular rheumatism.

The conclusions arrived at are as follows:

1. At the close or during an attack of sore throat, articular rheumatism or joint swellings closely resembling rheumatism appear.

2. In the exudate of angina lacunaris in the synovial fluid and the vessels of the joints in rheumatism, micro-organisms, morphologically and biologically alike, are found.

He believes these micro-organisms to be the cause of rheumatism and their source to be the mucous membrane of the throat. Friedlander's bacillus and the Fränkel-Wenschelbaum diplococcus are considered causative factors.

**Welch, William H.: Clinical and Bacteriological Diagnosis of Diphtheria.** (*Maryland Medical Journal*. 1897. Vol. xxxvi. No. 22.)

The old discussion as to whether diphtheria is a local or a general disease has lost all significance in the light of the discovery of the bacillus of diphtheria and the study of its properties. One of the most important attributes of this bacillus is its power to produce a chemical poison of appalling potency. This poison may be compared in a general way, as to some of its properties, to the poison secreted by a venomous serpent.

In diphtheria the bacillus itself grows only or chiefly at the point of invasion, which is usually the throat, and in its neighborhood, where it leads to inflammation, generally with the formation of a false membrane. Here, growing only superficially in the membrane, the bacilli secrete their terrible poison or toxin, which is absorbed into the circulation and causes the grave constitutional symptoms of the disease and serious damage to remote parts, such as the heart and the kidneys. The local lesion, the false membrane, is caused directly by the bacilli; the general symptoms and distant lesions are the result of the action of the specific poison.

The subject of serum therapy or the treatment of diphtheria by antitoxin does not belong to the theme and the author only says that the efficacy of this treatment has passed beyond the experimental stage and is settled beyond all doubt. Antitoxin, where generally employed, has reduced the fatality from diphtheria at least fifty per cent. Thousands of lives have already been saved by its use and countless thousands will be saved in the future by a discovery resting entirely upon the results of experimentation upon animals.

The diphtheria bacillus affords a positive and practically unfailing means of diagnosis of the disease diphtheria. The possibility of this accurate diagnosis signifies much for the practitioner and for the patient.

Before the discovery of the bacillus of diphtheria the disease was diagnosed by certain symptoms and lesions, the most characteristic feature being the presence of a false membrane. This constitutes the clinical diagnosis of diphtheria and it still remains the most available method of diagnosis for the great body of medical practitioners. The bacteriological diagnosis of diphtheria is not to be regarded as intended to supplant the clinical diagnosis or in any sense as antagonistic to the clinical method. It is simply a valuable additional aid in diagnosis, in many cases simply confirmatory of a diagnosis reasonably certain upon clinical grounds, and in doubtful cases of decisive importance.

The question is of much practical importance whether the diagnosis of diphtheria by bacteriological methods necessitates any material readjustment of the views which had been reached by the anatomical and clinical study of the disease. In the author's opinion no such readjustment of these views is re-



quired, as would appear from some of the writings upon this subject. Experience in Baltimore has been that over 90 per cent. of the primary pseudo-membranous inflammations of the throat, which the physician upon clinical grounds alone would confidently diagnose as diphtheria, are in fact genuine diphtheria, capable of demonstration as such by the detection of the Klebs-Löffler bacillus. Statements, based upon the examination of large series of suspected cases of diphtheria, to the effect that not more than 60 to 75 per cent. of the cases are genuine bacillar diphtheria, are in a measure misleading and it is not to be understood that all of these suspected cases relate to primary, pseudo-membranous inflammations, about the nature of which the practitioner would not be in doubt upon clinical grounds. It sometimes requires repeated, painstaking examination to detect the diphtheria bacilli in diphtheritic exudates, although as a rule, they can be found without much difficulty. So far, then, as these primary pseudo-membranous inflammations of the throat are concerned, no important readjustment of diagnosis is required as the result of bacteriological studies. Not a few, however, of the pseudo-membranous inflammations of the throat secondary to scarlet fever and other acute infections are due to other organisms than the Löffler bacillus and are, therefore, not true diphtheria. The primary membranous croups are nearly all diphtheria.

But it is in the doubtful cases, and more particularly in the milder inflammations of the throat with little or no false membrane, that the bacteriological diagnosis is of prime service. Here the clinical diagnosis alone is generally not decisive. Some have been very reluctant to include these mild cases under diphtheria, but the conception that diphtheria may manifest itself in the form of mild, non-membranous inflammations was not introduced by the bacteriologists. There were not a few excellent clinicians who advocated this doctrine long before the bacteriological era. One sometimes hears to-day the statement that bacteriologists demand that every throat harboring the Löffler bacillus should be regarded as affected with diphtheria. Such a view is as ridiculous as to consider the presence of the streptococcus upon the healthy skin as indicative of erysipelas.

The author, in conclusion, emphasizes the great value to the medical profession and to the interest of public health, of the establishment of well equipped and properly directed bacterio-

logical laboratories in connection with the municipal and State Boards of Health.

A model in this respect is the laboratory of the Health Department of New York City, which has already accomplished results demonstrating the great benefits to the medical profession and the general public of such laboratories.

**Smith, Eustice: Adenoid Vegetation in the Newly-Born.** (*Ref. Archives f. Kinderheilkunde*, B. xix., H. v., vi.)

The author gives the opinion that laryngeal stridor, which is sometimes observed in the newly-born, is due to congenital vegetation. The growth produces a reflex innovation of the larynx through the centre in the medulla.

**O'Malley, Joseph M.: Typhoid Fever in Infancy.** (*University Medical Magazine*. 1897. Vol. ix. No. 9.)

The author reports three cases of typhoid fever in young subjects, these three children being a brother and sisters. The father and mother suffered from typhoid at the same time.

Mary, white, female child of three and a half years, seen October 24, 1896. She had been complaining of feeling ill for a week; there was no history of diarrhœa or epistaxis. On examination the abdomen was found tender and somewhat tympanitic, and rose-spots were visible, but spleen could not be palpated, the tongue was coated and dry, the child was apathetic and indifferent, but took nourishment well. Temperature in axilla was 104° F. and pulse 130. Two days later she was removed to St. Agnes' Hospital. Upon admission to the hospital her temperature was 103 $\frac{2}{5}$ ° F.; pulse 128; respiration 36; from this time on her temperature was taken every two to three hours, and was typically typhoid in its characteristics. October 31st a second crop of rose-spots was again observed, but spleen could not be palpated. Her temperature reached the normal on the twenty-third day of the disease. Recovery.

Catherine, aged twenty-one months; attention was called to her on October 26th; the child had been restless and irritable for a week previously, and had diarrhœa and refused nourishment. She was removed to the hospital October 26th, and on admission her axillary temperature was 104° F. and pulse 140; respiration 28; abdomen tender and tympanitic, there was no rose-spots, and spleen was negative. November 4th a crop of rose-

spots appeared, but spleen could not be palpated. Her temperature curve was typically typhoidal, and reached the normal on the twenty-third day of the disease. In this case the temperature during the period corresponding to the second stadium in the adult reached its maximum,  $106\frac{2}{3}^{\circ}$  F. Recovery.

John, aged six years, was under observation from the time he began to feel unwell, and was taken to the hospital November 12, 1896. In this case there was a progressive zigzag rise for five days, and on admission his temperature was  $104^{\circ}$  F.; pulse 120; respiration 32. There was diarrhœa and epistaxis, tongue was coated but moist, the frontal headache was marked, and the child complained of pain in his back and limbs; abdomen was tympanitic and tender, and rose-spots were visible upon abdomen; spleen was enlarged, extending from sixth rib to costal margin, and could be readily palpated; there was a soft systolic murmur at heart-apex. Temperature reached normal fourteenth day of the disease. Recovery.

**Carlaw, Chester M.: Prognosis of Broncho-Pneumonia.**  
(*Northwestern Lancet.* 1897. Vol. xvii. No. 8.)

The prognosis of broncho-pneumonia is a most difficult problem. The disease must always be looked upon as one of the most treacherous to which child-flesh is heir. We often meet cases where the prospects seem bright, that in a few hours, very much to our surprise, suddenly collapse. On the other hand, in cases that seem to be the most desperate, and where all chances of recovery seem darkened or impossible, recovery takes place. It is in this disease that, on the one hand, the truth of the old saying, "Never despair of a sick child," is shown, and on the other, we must never prophesy a complete recovery, no matter how slight the case may seem. We must bear in mind that deep-seated consolidation may exist which cannot be detected, so that what may seem to be a slight case, so far as physical signs are concerned, may be severe and liable to terminate in death.

The following circumstances influence the prognosis:

1. The danger from broncho-pneumonia grows greater in proportion to the infancy of the child. The younger the child, the smaller the chances of recovery. Under six months, few recover; from six months to one year, from 40 to 50 per cent. die.
2. The associated or preceding disease also influences the



prognosis. It is less dangerous when it follows measles than when it follows whooping-cough or diphtheria. The death rate is very high when it follows whooping-cough.

3. The acute form is less dangerous than the more protracted or chronic form.

4. The danger is in direct proportion to the extent of the lung involved. The more lung consolidated the greater the danger to life.

5. A diminution of the powers of resistance of the patient increases the danger to life. This is an important factor, particularly as the nutrient blood itself is chemically changed by the presence of non-eliminated carbonic acid, and hence the process of nutrition must be materially interfered with. Therefore, in children that were originally feeble as a result of any constitutional condition, or those that have undergone any severe acute infection, the disease runs a much more pernicious course, and they are liable to far greater danger than those who are strong. The same is true of very fat children, because the volume of blood in them is less in proportion to the weight of the body than in well-nourished children who are not fat.

6. A feeble, frequent pulse; a pulse-respiration ratio of 1 to 1, or 1 to  $1\frac{1}{2}$ ; diminution of the power to cough; and restlessness giving place to stupor or delirium, are all unfavorable symptoms. The occurrence of convulsions late in the disease is nearly always fatal.

**Editorial: Tests for Hearing for School Children.** (*Atlantic Medical Weekly.* 1897. No. 13.)

In an editorial article on this subject, the writer expresses surprise that, notwithstanding the attention which is now paid to child study and the increasing attention given to the organs of special sense in children, no better test for hearing has been proposed than the routine one of the watch, or one similar.

A difficulty met in the indisposition of teachers to devote the necessary time to test the hearing of each child can be obviated by the following method, which offers a speedy and efficient test of the hearing power.

The children should be placed in a semicircle with the teacher who conducts the test at its centre.

In a low whisper certain numerals or words are spoken. Supplied with paper and pencil, each pupil is required to write

under the heading (1) the words used by the teacher as understood. Under (2) the words spoken in a loud whisper, (3) conversational voice, (4) loud voice.

Now, if the radius of this circle should be taken as twenty feet, a comparison of the replies to (1) will at once detect those pupils who are unable to hear a low whisper at twenty feet; and in the same way the other numbers will show who have defective hearing for ordinary whispers, conversational voice and loud voice at the same distance.

Thus in a half hour the entire school may easily be tested, and those found defective referred to their parents as needing a more careful examination to determine the exact degree of deafness, and, if possible, its cause.

In making such a test, care should be taken that the pupils do not determine from the motion of the lips the words used, as many children with poor hearing soon acquire a marvelous power in lip reading.

**Cosgrave, E. MacDowell : Two Cases of Relapse in Scarlatina.** (*The Dublin Journal of Medical Science*. 1897. No. cciii.)

Case I. was a girl of nine years of age, who was admitted into Cork Street Fever Hospital on November 12, 1896, suffering from a severe attack of scarlatina anginosa, the temperature falling to normal on the ninth day. On the twenty-eighth day, while desquamation was occurring in large flakes on the feet, the child had an attack of vomiting, and the temperature ran up to  $105.8^{\circ}$ , and a punctiform rash appeared, the tongue and pharynx being also typically affected, and albumin appearing in the urine. On the eighth day of the relapse secondary desquamation commenced, and gradually spread over the body.

Case II. also was a girl, aged nine years, who was admitted to Cork Street Hospital with a younger sister, on November 27, 1896, suffering from well-marked scarlatina. Eighteen days after admission, while free desquamation was going on, the child complained of headache and sore throat, the temperature rose to  $105.8^{\circ}$ , and a punctiform rash appeared; desquamation, where occurring, was increased, and where finished was repeated.

In Cork Street Hospital the patients were not kept as long as possible in the same ward, but were removed to another ward,

and very often to another building. There was a Convalescent Home in connection with Cork Street, and, so far as possible, the cases were kept separate.

**Demelin; Broncho-Pulmonary Hemorrhages in the Newly-Born.** (*Rev. Obstet. Internat.* 1897. No. 73. *British Med. Journal.* No. 1886.)

The author analyses the results of twenty-two observations of broncho-pulmonary hemorrhages in the new-born infant reported by various observers, past and present. In such cases apoplectic areas (often multiple) are found in the lungs, usually at the bases and posteriorly. The bronchi and trachea often contain blood, and so do the stomach and intestine, and in the latter fact probably lies the explanation of the puzzling cases of so-called melæna neonatorum, with complete integrity of the mucosa of the digestive tract. The pre-disposing causes are prematurity, congenital debility, the male sex and malformations; while the hemorrhage is most often produced by thoracic compression in breech cases or in turning; it may, however, occur after labor is over from congenital friability of the blood vessels. The most prominent symptoms are cyanosis, and the escape of blood from the mouth or nose, along with slow and painful respiration, and sometimes œdema of the lower limbs. Death follows in a few minutes or in a few hours. The diagnosis is easy when there is external hemorrhage, care being taken not to confound the condition with gastro-intestinal bleeding; the distinguishing feature is the cyanosis, which exists in the pulmonary cases. When there is no external hemorrhage the diagnosis is difficult, and rests upon the cyanosis and the physical examination of the chest. The prognosis is always very grave, and treatment ought to follow the lines indicated for severe hemorrhages. Billard recommended the application of a leech in the axilla on one or both sides. Usually, however, there is no time for treatment.

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#### SURGERY.

**Pyncheon, Edwin; Intussusception Treated by Irrigation.** (*Mathew's Quarterly Journal.* 1897. Vol. iv. No. 13.)

The author reports a successful case of intussusception, treated by irrigation, with a minute account of the technique employed, which was as follows:

In the centre of the room he inverted a high-back dining-



room chair so the top of the back rested upon the floor, and under the front edge of the seat placed a bootblack stand, with some large books thereupon, which made a support of a sufficient height to permit the back of the chair to slope at an angle of about  $75^{\circ}$ . He next placed over the chair a bed bolster and covered this with an old quilt folded about six times lengthwise. The patient was quickly anæsthetized with chloroform, which for several reasons was in this case the preferable anæsthetic, and was then suspended over the chair, face downward, with her head near the floor and her thighs well secured between the legs of the inverted chair. The condition of anæsthesia was kept up during the entire procedure. A fountain syringe was then filled with water heated to about  $110^{\circ}$  F., and the bag was hung up as high as the ceiling of the room would allow, the room being on the second floor of a two-story house, and hence it was not possible to further increase the fall of the water. Had the operation been done on the lower floor, the syringe-bag, by lengthening of the tube, could have been carried gradually up stairs until all the pressure wished for was secured. The operator decided that by forcible abdominal massage he could get the equivalent of perhaps double the five feet of fall with which he had to be contented. A trouble anticipated was the great tendency the water has to escape from the anus as soon as the colon is partially filled. In this case the sphincter was found so much relaxed that it would allow the entrance through it of a tip one and three-eighths inches in diameter. A soft rubber bulb nozzle one and three-fourths inches in diameter, surrounding an ordinary hard rubber rectal tip was then tried, and found to serve as an efficient cork to prevent the escape of water and to perfectly retain it. The result was relief of the intussusception.

The conclusions deduced from a study of the case, and a digest of the literature pertaining to conditions of acute bowel obstruction, were:

That copious enemata, promptly and persistently employed, are indicated in the early stages of acute intestinal obstruction.

That the patient must be anæsthetized and suspended in a position of inversion.

That the water should be as hot as can be safely used, and there should be available no less than three gallons.

That a rectal tip must be used which will positively control

the escape of water from the rectum, and that no long colonic tube is required.

That no air must be allowed to enter the gut, and the water pressure must be constant and not intermitting, meaning by that a disapproval of the earlier method of alternately filling the gut so far as possible and then allowing it to empty itself.

That while the pressure must not be allowed to weaken, the onward flow of water can be made to alternate with forcible abdominal massage.

That the fall of water may be varied from fifteen to thirty feet, according to the age of the patient and the stage of the trouble, providing a lesser fall of say six feet, in alternation with massage, is not successful.

[Fifteen feet we should regard as the highest point at which the fountain syringe could be safely carried, and this only in a recent case.—ED.]

**Lucas, R. Clement: How to Stop the Inflammation from Vaccination when Running to Excess.** (*British Medical Journal*. 1897. No. 1883.)

Now that direct calf-lymph vaccination is generally advocated, and it is admitted that inoculation from this source is commonly followed by more severe local and general inflammation than arm-to-arm vaccination, it may be well that a means of cutting short the inflammation should be known to every practitioner. This is the more important since the organization of a blind and bigoted Society is ever on the alert to make capital and sensation out of any case not following a regular course. Should, then, the vaccination pustules on the twelfth or fourteenth day tend to become confluent, while the inflammatory areola tends to spread beyond the usual limits, the glands in the axilla to enlarge, and the arm, perhaps, to become œdematous, the author suggests that the area of the pustules should be powdered over with iodoform, and a sterilized dry pad be applied to keep the powder in position and the pustules from friction. In this way the process is completely checked in twenty-four hours. The pustules dry into a cake, the redness subsides, the glands decrease, and the œdema of the arm rapidly disappears. This is in every way preferable to hot fomentations or antiseptic moist applications, which, apart from the difficulty of applying them to an infant, involve the healing of open wounds.

# ARCHIVES OF PEDIATRICS.

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## Original Communications.

### PRE-NATAL INFECTION IN DISEASES OF INFANCY.\*

BY EDWARD P. DAVIS, A.M., M.D.

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With those who observe considerable numbers of infants, it is not uncommon to find cases in which a child, apparently healthy at birth, develops during the first few weeks of life a condition of apparent infection ending fatally. The predominant feature in these cases is the disorganized state of the infant's blood manifested by hemorrhages from the bowel, sometimes from the vagina, urethra, nose, mouth and, in extreme cases, from the skin. Under the name of Winckel's disease, hemorrhagic disease of the newborn, hæmoglobinæmia and other titles, these cases have been variously described. During the past few years at the Maternity Department of the Jefferson College Hospital, an effort has been made to ascertain some of the conditions predisposing to this infection, and to devise suitable methods of treatment. In private practice, cases are not infrequently observed which do not go to the point of actual hemorrhage, but in which the new-born child gradually develops green stools, prostration, convulsions, coma, and death. From analogy, and from the successful treatment of some of these cases, we assign to them an infectious origin, and separate them from cases of hemorrhage only by degree and not by kind.

During the past few months, in connection with Dr. David Bevan, Pathologist, and the Resident Staff of the Maternity, we have examined the blood of a number of women before labor,

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\*Read before the American Pediatric Society, Washington, May, 1897.



examined the milk from the breasts, and the placenta, and also the blood and faeces of their infants. The mothers were unselected cases, embracing a considerable range in age, weight, physical condition and social status; negro, mulatto and white women were among the number. Most of these women were to some extent anæmic, as many of them were illegitimately pregnant, and had been reduced in strength by mental anxiety, dissipation or hard work; others were vigorous, sturdy, servant women. Space and time forbid an enumeration of detailed investigations, and only averages will be stated and the possible indications which they afford.

As regards the blood of the mothers, the average number of red corpuscles before labor was found to be 4,485,384; the average number of white cells, 18,693; the average percentage of hæmoglobin, 73; this in a total of twenty-six mothers. When the blood of eighteen infants was examined, the average number of red cells was 5,116,388; white cells, 11,888, and hæmoglobin, 88 per cent. It was noticeable that no correspondence exists between the number of cells or percentage of hæmoglobin in a given mother and the same in her infant. Some of the most anæmic mothers had infants whose blood far excelled the maternal condition. It does not seem possible to infer, then, that because a woman is somewhat deficient in blood before labor, that necessarily her infant will be correspondingly affected. The fœtus seems to thrive in this regard somewhat independently of the mother. No cases of profound maternal anæmia presented, and purposely none was sought, as such conditions are rare in private practice; we could not, then, conclude that children became hemorrhagic, or developed intestinal toxæmia, because the mother was deficient in blood.

The placenta of these mothers were examined immediately after birth to ascertain the presence or absence of infective germs; somewhat to our surprise, these examinations were uniformly negative. It has been abundantly proven that the acute infections—typhoid, tuberculosis and sepsis, pass through the placenta, but evidently, in the average woman, the placenta at birth is a sterile substance.

The mother's milk was also examined to ascertain the presence or absence of infective bacteria; here, again, in 57 per cent. of cases examined, the secretion of the breast before the child had nursed was sterile; in the remaining 43 per cent., the ordinary

pyogenic bacteria were present, namely, *pyogenes albus* and *aureus*. It is evident that if infective germs are contained in the breast before the child nurses, a ready explanation is thereby afforded of intestinal and subsequent toxæmia. In none of these mothers did breast-abscess develop at any time; each of these women had antiseptic dressings upon the breast during the puerperal period, so it seems fair to believe that micrococci, obtained in the milk, came from the milk-ducts, and were not the result of external contamination. The presence of these organisms in the breast before the child has nursed has been observed by others.

The examination of the fæces of these infants revealed the fact that in  $11\frac{1}{6}$  per cent., micro-organisms were present in the

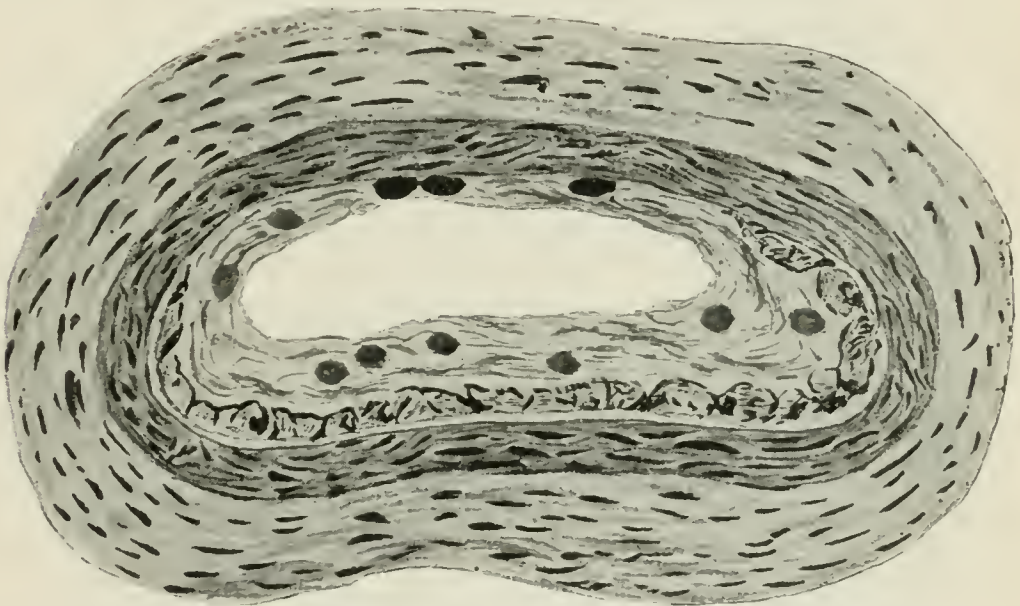


FIG. I. ARTERY FROM KIDNEY. SHOWING THICKENING OF THE ADVENTITIA, THICKENING AND ROUGHENING OF THE INTIMA, AND THE FORMATION OF A THROMBUS.

fæces before the child had nursed; in  $33\frac{1}{3}$  per cent., after the child had nursed, while the remainder failed to show presence of intestinal bacteria. The germs found were the *pyogenes albus* in most cases, the *pyogenes aureus* and minor forms in others, while in one the *bacillus coli communis* was present. These observations, while not extensive, seem to point to the fact that in the milk of the mother there may be present organisms capable of setting up infection in the child's intestine with resulting toxæmia. Regarding the general conditions under which these children were born, antiseptic precautions were maintained in all births; none of these mothers became septic; no case of septic

infection of the umbilicus or ophthalmia developed in these children; inspiration-pneumonia did not occur; no acute infectious process, as erysipelas, was present in the patients or the Staff of the Maternity. Some of these patients unquestionably had previously suffered from gonorrhœa, and possibly some of them from syphilis, and thorough antiseptic precautions were taken with all women before labor; but puerperal septic infection was not present as an element in these cases. These investigations, therefore, would tend to show that infantile disease may arise without gross lesions or recognized disease on the part of the mother.

While these investigations were in progress, a number of cases, varying in severity, arose among the infants examined, in which green stools, variations of temperature, hemorrhages, and in some cases a fatal result developed. In one of these children, the mother was in good condition, but when the child's fæces, passed before nursing, were examined, the *micrococcus pyogenes albus* was obtained in pure culture; this child developed the symptoms described, which proved fatal, and autopsy revealed briefly the following: the kidneys swollen, dark, and oozing with blood; the mesenteric and retroperitoneal glands greatly swollen, but not caseous; the liver also; the suprarenal capsules contained clotted blood; the walls of the ventricles were relaxed, and contained clotted blood; the intestine had been freely irrigated, so that its condition was not characteristic: in this instance, it is possible that the child's disease arose from germs already present in its intestine at birth.

In Case II., neither mother nor child showed an abnormal condition of the blood at birth; no bacteria were obtained from the milk, nor were any found in the intestine immediately after birth. The mother was a young colored girl, aged sixteen years, who just before her labor became toxæmic, the specific gravity of her urine steadily decreasing, while the percentage of urea fell to  $\frac{63}{1000}$  of one per cent. Her child died eleven days after birth, with a temperature of 106° F. and multiple hemorrhages from all mucous surfaces. *Post-mortem* examination of the child revealed no evidence of infection or inflammation at the umbilicus. Blood-stained serous fluid was found in the abdomen, while the mesenteric blood vessels were empty, the lymphatic glands swollen. The pleuræ were dry and sticky; the blood was fluid and dark; dark red areas were found in the lungs;



fluid blood was found in the suprarenal capsules; the kidneys were engorged; multiple hemorrhages were present in the stomach and intestine. At the time of the child's death, the mother's hæmoglobin percentage was 75; the child's was 110, hæmoglobin crystallizing upon the slide. The red corpuscles were greatly distorted, while there was an increased number of eosinophile cells. From the fæces of the infant were cultivated the *bacillus coli communis* and the *micrococcus pyogenes aureus*.

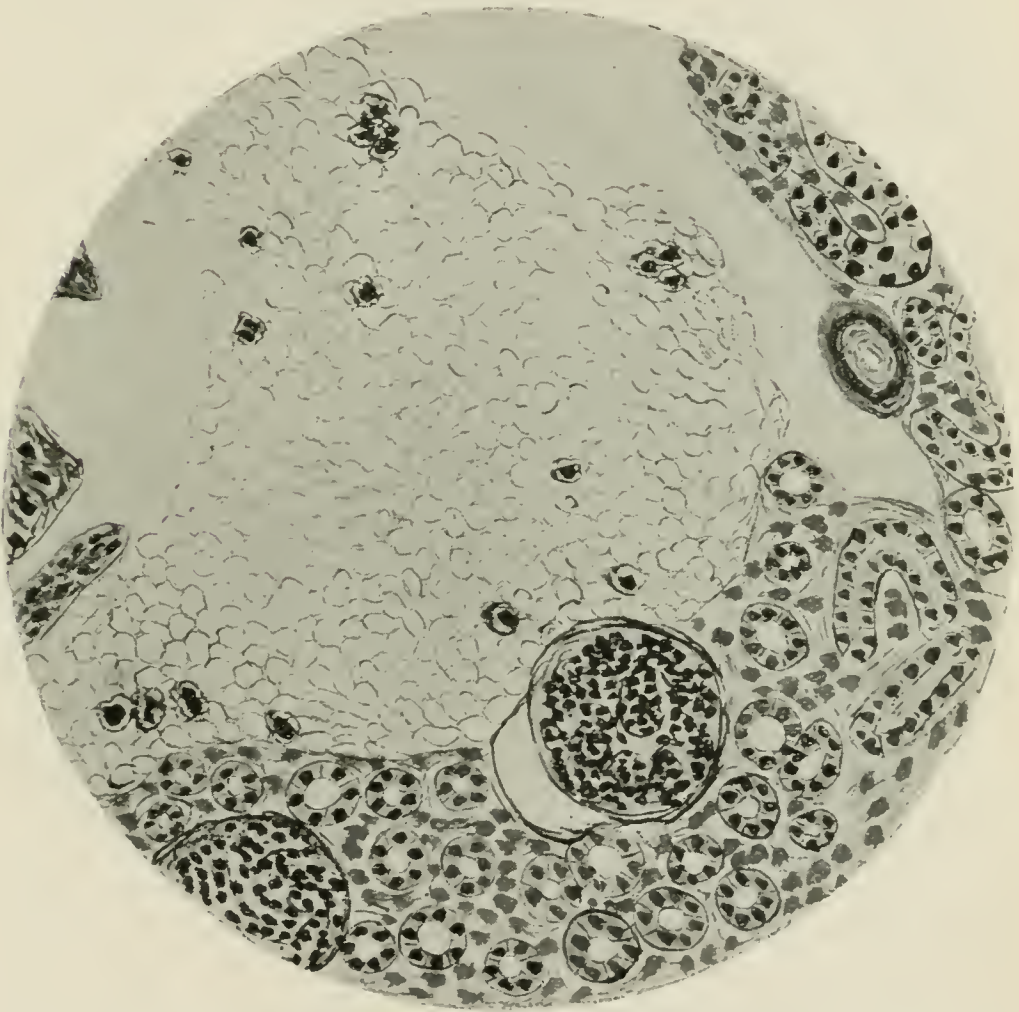


FIG. 2. SECTION OF KIDNEY (NEAR THE ARTERY REPRESENTED IN FIG. 1), SHOWING AREA OF HEMORRHAGE.

Microscopic study of the organs showed non-infective periarteritis in all the small vessels, many of the arteries being sacculated. The hemorrhages were by diapedesis. In this instance, the question naturally arises: Did not the deficient excretion of the mother have much to do with the condition of the infant? and the inference seems rational that such was the case.

Acting upon the suggestion which the bacteriological examination of the milk and fæces gave, all cases showing a tendency to green stools, discharges of blood or hemorrhages from mucous surfaces, were treated by copious intestinal irrigation with normal saline solution; the result, with the exception of the two cases mentioned, was a gradual improvement and disappearance of the symptoms. Although the mother's milk could not be proved in all cases to be at fault, still, unless prompt improvement followed the cleansing of the intestine, nursing was suspended, and pasteurized milk, partially digested, was employed. Small doses of calomel were given in a number of cases, but were thought to be of much less value than intestinal lavage. No other method of treatment seemed to have the slightest avail. The administration of the ordinary laxatives, such as castor oil, was without result.

Repeated attempts have been made to isolate, from the bodies of infants so dying, a germ which would cause the disease in animals. In 1894, three infants were suddenly attacked in the Maternity by acute hæmoglobinæmia; one of the mothers had been alcoholic; the others had good histories. None of them was septic. The attacks were typical, the blood of the children during their illness showing that while red corpuscles were not greatly diminished in number, they were considerably altered in shape and contour, while the white cells were much increased. No condition in the blood of the mother was found which accounted for the disease in the child. Dr. A. V. Walter, a senior student at that time of the Jefferson Medical College, made, under the supervision of Dr. D. B. Kyle, inoculations from the blood of these children; from these inoculations was isolated a coccus, multiplying rapidly at ordinary temperature in liquid and solid media, and specially in faintly alkaline substances. Pregnant guinea-pigs were inoculated with this germ, and their blood and that of their young was examined; the identical germ was found in the young pigs. As this germ was not described in any available books upon the subject, it was sent to three of the principal bacteriological laboratories of the country, one being that of the War Department of the United States; by two of these it was classified as a sarcine, while by the third it was announced as undescribed. This germ most closely resembled that described by Sternberg as *micrococcus tetragenus versatilis*, associated with yellow fever; it was not ascertained whether the



germ gained entrance to the foetus by the placenta, or by the umbilical vessels during birth.

I may briefly call your attention to the association existing between maternal toxæmia and a similar condition in the foetus. A year ago, I removed from a woman just dead of eclampsia, a vigorous male child by Cæsarean Section; although this infant had careful attention, being nursed by a healthy woman, he died

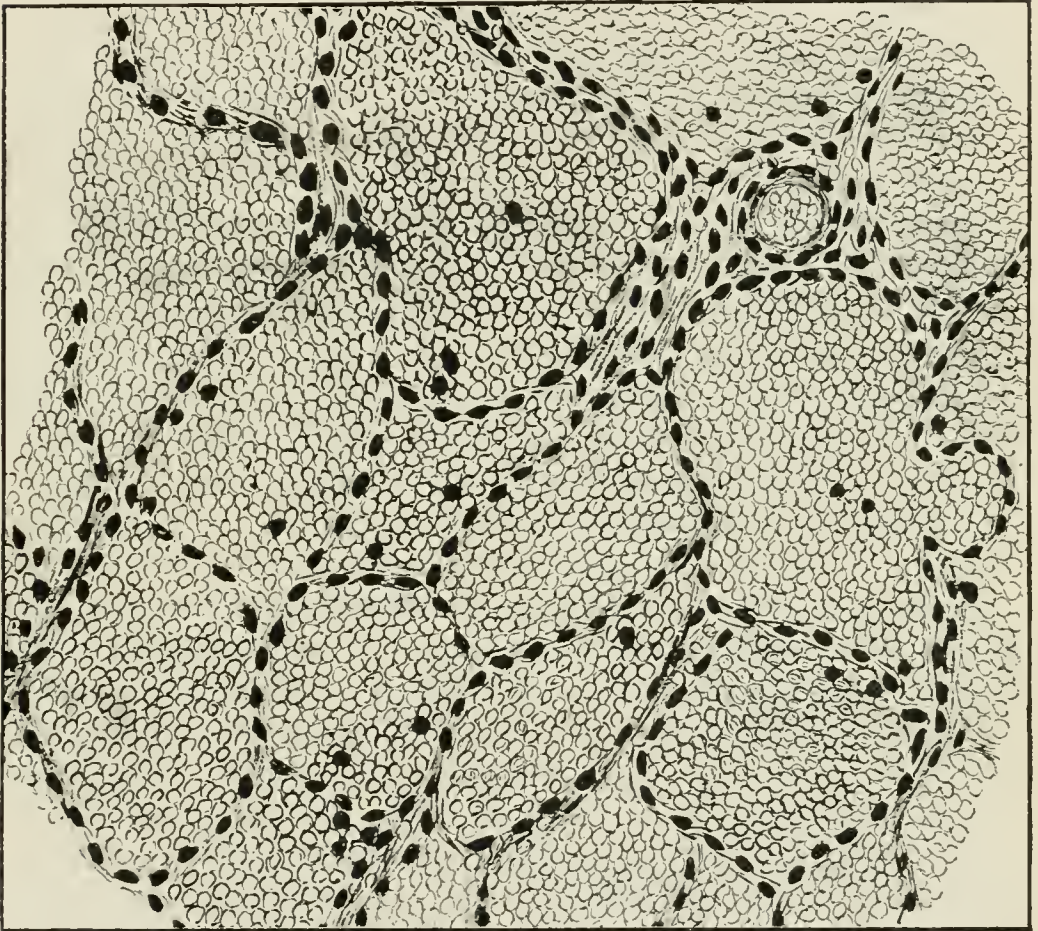


FIG. 3. MULTIPLE HEMORRHAGE INTO LUNG OF INFANT FROM WHOM FIGS. 1 AND 2 WERE TAKEN.

in two weeks from toxæmia, with visceral conditions identical with those described. But a few weeks ago, a private case was observed in which the mother during pregnancy suffered from chronic dyspepsia, with deficient action of the liver. Her kidneys secreted fairly well, but she had a history of previous appendicitis and jaundice. Her infant developed green stools, fever, convulsions, toxæmia and death, although the mother's milk showed no abnormality. The child was immediately given



pasteurized and modified milk; intestinal lavage was thoroughly done and all known remedies employed, but without avail.

In closing the account of this study, I may venture to draw the following conclusions: the infant's blood is not dependent upon the mother's plethora or anæmia for its cells or hæmoglobin; excepting in the acute infections, the placenta is usually sterile; the fæces of the infant before it has nursed may contain micrococci; the mother's milk before the child has nursed may also contain micrococci; in conditions of maternal toxæmia, the same poison which affects the mother is transmitted to the child, in some cases by substances other than bacteria. There exists in infants a toxæmia of apparently intestinal origin, mild cases of which are susceptible to treatment, while severe cases end in multiple hemorrhage and death; in the latter, a germ, resembling that associated with yellow fever, is capable of transmission through pregnant animals to their young, and has been isolated. So far as treatment is concerned, thorough lavage of the intestine with sterile saline solution gives best promise of success. Should the milk of the mother be infected, sterile modified milk should be employed, or other foods known to be sterile.

250 SOUTH TWENTY-FIRST STREET.

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**Cent in a Child's Œsophagus for nearly two months.**—Dr. Edmund E. King, reports such a case in the *Canadian Practitioner*. The patient, a bright child between three and four years of age, was playing on the floor with a cent and some toys. When the child was picked up the cent could not be found. The possibility of the child having swallowed it was thought of and an emetic given, but without result. On examination it could not be located, and it was thought that if the child had swallowed the coin it would pass into the stomach and out *per via naturalis*. The little one refused solid food. Would take liquids very sparingly and swallowed with great difficulty. A part of liquid would regurgitate. She vomited frequently. This state of affairs continued for about two months. She lost flesh and was failing fast. I made a skiagraph of the child's neck and located the coin. It showed distinctly on the left of median line, about on a level with the articulation of third rib and sternum. It was removed with very little difficulty. The child made an uneventful recovery. The time of exposure was four minutes and the resulting skiagraph very satisfactory.

# A CASE OF CONGENITAL DIAPHRAGMATIC HERNIA, ASSOCIATED WITH RECURRENT ATTACKS SIMULATING ASTHMA DYSPEPTICUM.\*

BY WILLIAM D. BOOKER, M.D.,

Clinical Professor of Diseases of Children, Johns Hopkins University,  
Baltimore.

This case was placed under my care on January 4, 1897, through the courtesy of the attending obstetrician, Dr. W. W. Russell.

The child was born December 14, 1896, in natural, though prolonged labor; apparently well developed, not blue, and nothing abnormal was noticed at birth. Weight, eight and one-half pounds. His condition and general thrift was satisfactory up to the ninth day, when he was affected with indigestion and colic, attributed to the whiskey given at the time of performing the ritual of circumcision.

*Status præsens.*—January 4, 1897. Eyes bright and strong; complexion good; nothing to attract attention to the respiration or circulation; has lost nearly one pound in weight; is restless in the day, but sleeps well at night; nurses exclusively at the breast and with vigor; milk flows freely and in abundance during the nursing. Child has eight to twelve greenish, lumpy stools daily, and considerable colic. Preputial and navel wounds are healed.

The indigestion was relieved in a few days by diminishing the quantity of milk taken at each nursing, and during the week ending January 16th, the child gained eight ounces in weight, and appeared to be improving in every respect. On January 18th, the mother was afflicted with deep grief owing to the sudden death of her father, and the child was again disturbed with indigestion and colic, attended with frequent vomiting and quickened and labored breathing. The respirations were 60 to 80 to the minute and there was recession of the soft parts of the chest with inspiration. Pulse 130 to 160. Percussion resonance over the chest was accentuated and the tympanitic sound of the abdomen was transmitted high in the thorax. Vesicular breathing could be heard over the whole of the chest, but it was much

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\*Read before the American Pediatric Society, Washington, May 4, 1897.

more feeble than normal. The heart sounds were greatly obscured by the frequent and violent movements of the chest, but it could be safely determined that no murmur existed. The abdomen was soft and not distended, although there was a considerable escape of gas from the intestine.

The difficulty in breathing was attributed to the pressure of gas in the stomach and bowel, and, probably, also to absorption of injurious substance from the intestine, and the quantity of milk allowed at each nursing was again diminished. The vomiting ceased in a day or two, but the labored breathing continued without other symptoms. During the night of January 23d, it became much exacerbated, and most alarming features developed, presenting a frightful picture of Henoch's asthma dyspepticum. After a short spell of restlessness and crying the child suddenly became blue in the face and hands; he made violent efforts at respiration with very slight success; his pulse was not perceptible; the extremities became cold and cold perspiration dripped from his face. Dr. Geer arrived in twenty minutes after the attack began, and thought the child was dying. He applied warm mustard cloths to the body and extremities, and in twenty to thirty minutes the paroxysm was relieved, having lasted nearly one hour. Active movements of gas could be heard and felt in the intestine during the paroxysm; no convulsive movements were noticed. I saw the child a few moments after the attack was relieved. He was breathing quickly and with greater effort than before the seizure; his pulse was rapid and so small that it was hardly perceptible; the face was pale, but there was a good color in the lips, and the eyes were bright and strong. It was difficult to realize that he had just passed through such a severe struggle. After being changed into dry clothes and placed in the crib he soon fell into a sound sleep, and the chest was again examined with the same results as those obtained from the previous examination.

Believing this frightful attack to be dyspeptic asthma, more energetic treatment was directed to the relief of the dyspepsia. The child was removed temporarily from the breast and placed on cow's milk diluted with two parts of water, with the addition of one grain of bicarbonate of soda to each feeding. Analysis of the mother's milk gave the following results; slightly alkaline; specific gravity, 1.035; fat, 1.5; proteids, 1.4; sugar, 6.775.

The cow's milk agreed well with the child, and was well



digested from the very beginning. Its effect upon the stools was decided. The stools had been green and very lumpy, five to eight in number daily. During the twenty-four hours of January 24th the child had six stools, all of which were green and lumpy. January 25th, twenty-four hours after the child had been placed exclusively upon cow's milk, there was marked improvement in the stools. There were three stools in the twenty-four hours; the first in the morning was greenish-yellow with a few curds, and probably represented the last of the breast milk fæces. The other stools were yellow, soft, uniform and free from curds; they probably represented the first of the cow's milk fæces. The breathing was much easier; the respirations ranged from 40 to 50 to the minute, and were not accompanied with recessions of the soft parts of the chest. Only when the child was startled, or at the sound of the mother's voice, would the breathing become quickened and labored for a few moments. On January 26th, another paroxysm of asthma occurred, which lasted only a few minutes. On January 28th and 30th, there were prolonged attacks, both of which began about 3 A.M., and lasted several hours. I saw the child in the attack of January 30th. At the time of my arrival, thirty minutes after the attack had begun, there was a temporary relaxation of the difficult breathing, but twitchings of the muscles of the arms and face could be noted. In a few minutes the child became blue in the face and hands, and made most violent struggles for breath, accompanied with great recession of the soft parts of the chest, in which the ensiform cartilage was retracted almost to the spine, the respiration being 70 to 90 to the minute. The extremities were cold and the pulse at the wrist was not perceptible. This condition continued for a few minutes, after which time the respiration became less labored, the cyanosis changed to pallor, and the face was bathed in cold perspiration. The lower jaw would drop with eversion of the lip in inspiration, presenting the picture of death agony, and but for the knowledge that the child had passed through a similar experience in former attacks I should certainly have considered him to be dying. This gasping, dying-like state continued fifteen to twenty minutes; then the child revived and fell into a light sleep, with limbs rigid and fingers alternately straightened and in a position of tetany. There was frequent jerking of the arms and contractions of the muscles of the face. The eyes were sometimes half closed, at

others staring and with a vacant look. Strabismus appeared later on in the spell. Inspiration was almost noiseless, but expiration was accompanied with a short cry or grunt. This condition lasted nearly two hours, although it was several times interrupted by slight attacks of asthma which commenced with a frightened cry, but continued only for a few minutes. In three hours after the paroxysm began there was complete relaxation, and the child fell into a deep, quiet sleep, from which he awoke in good condition.

As the asthmatic attacks continued without abating in intensity after the digestion had been good and the stools had been normal for five days, I began to fear there was something serious in the background, and asked Dr. Osler to see the child with me. At the time of this visit the child was placid and respiration but slightly quickened. After careful examination, and independently of my views, Dr. Osler also came to the conclusion that we had to deal with a case of asthma dyspepticum.

The child was now gradually restored to the breast and made fairly good improvement. Some weeks he showed a decided increase in weight, but in others he remained at a standstill. It was noticed that he could never nurse so well when applied to the left breast as to the right, and that he generally showed signs of more or less discomfort when lying on his right side. He also appeared to be more comfortable when carried in an upright position with his head resting over the nurse's shoulder. The attacks of asthma diminished in severity, but not in frequency. Sometimes there would be two attacks in the twenty-four hours, but they were of much shorter duration, and were much less severe than formerly. Various remedies were tried with a view of preventing, or at least relieving the paroxysm, but none of them were very effectual. A mixture of bromide of soda and chloral hydrate often appeared to moderate the severity and duration of the attacks, and sometimes, when given in time, even to prevent them; at other times it was without effect. The application of warm hop poultices to the abdomen also afforded relief in some attacks. Carminatives were entirely useless.

The attacks were always preceded by a short period of restlessness and crying. If the child was sleeping when the attack came on, he would begin to cry and squirm in his sleep; then suddenly he would become livid or blue in the face, and make

violent efforts in breathing. The attacks generally passed off with an escape of gas from the stomach and intestine, and in every paroxysm gas could be felt moving in the abdomen, it being sometimes possible to feel the motion over the whole body. It was often noticed by the nurse and parents that gas moved downward on the left side under the axilla, and sometimes appeared to meet with an obstruction at the lower border of the ribs. In passing this obstruction the gas produced a certain noise and jar to the side, after which the paroxysm was often suddenly relieved. Although the movement of gases in the intestines was sufficient to attract so much attention, the abdomen remained soft and was not distended.

About the middle of February, when the asthma-like paroxysms were becoming more and more moderate, the spells began to assume more the form of anger cry. The child would begin to cry and then suddenly hold his breath until the face was livid, then struggle awhile for breath, and again hold it. This condition of alternately holding the breath and struggling for it would sometimes continue for half an hour or longer, and during this time the child appeared to be under the influence of acute suffering rather than of anger.

At my regular visit, February 28th, 1 P.M., the child was playful and cooing, and gave every evidence of comfort and pleasure of a healthy and thriving new-born. His digestion was good; the stools were normal; he slept well, was gaining in weight, and everything looked hopeful for complete recovery. At 9 P.M., I received an urgent call for immediate attendance; on my arrival I found the child dead. He had died in a paroxysm of only moderate severity, and in about ten minutes after the attack began. He had been dead but a few minutes when I arrived. His body was warm; the abdomen was soft and in better condition for examination than it had been during life. The liver could be distinctly made out and did not appear enlarged. A cord the size of a finger could be felt running along the left of the spine from the lower border of the ribs to the pelvis. The abdomen did not appear to be so full as normal, though the absence of organs was not recognized.

*Autopsy.*—March 1st, 1 P.M. Made and protocol dictated by Dr. Flexner.

Body is well grown and has a fair amount of subcutaneous fat. Nothing unusual noted externally.



On opening the abdomen, which is very little distended it is noticed that the loops of small intestine are very deficient. The sigmoid flexure and rectum are on the left side and quite distended. Liver occupies the normal position, being, perhaps, driven a little to the right side. It is found now that the right lobe is better developed than the left. The stomach is very prominent, extending half a hand's breadth below the costal margin, and entirely covers over the spleen which, together with the stomach, is contained in the peritoneal cavity. The great omentum is adherent along the inferior border of the stomach, where it spreads over, and becomes attached to the superior surface of, the right edge of the spleen. Only a small portion of omentum is contained within the peritoneal cavity; most of it has passed, together with the transverse colon and all of the small intestine, beginning about two inches from the pylorus, into the left pleural cavity. There is a deficiency in the diaphragm on the left side 2 cm. from its costal attachment and the same distance from the left crus 6 cm. in circumference. This opening corresponds with the space in the transverse septum.

The peritoneum which is reflected over the diaphragm from the kidney forms a continuous covering and surrounds this orifice, which is limited laterally by a reflexion of peritoneum that forms the main ligament of the kidney. The heart occupies a position to the right of the median line and lies deep in the mediastinum. The whole of the left pleural cavity with the exception of a small area occupied by the compressed left lung is taken up by loops of intestine. These consist of the transverse, ascending, and part of the descending colon of the cœcum, of all of the small intestine excepting the first two inches of the duodenum, the pancreas and the greater part of the omentum. The right lung is insufflated, showing compensatory emphysema; the left lung is very much compressed and does not contain air excepting along the edge, which is slightly emphysematous. It measures 6 cm. in length, 4 cm. in width, and 2.2 cm. in thickness. The foramen ovale admits of a good sized probe. No other malformation discovered.

Congenital diaphragmatic hernia is of rare occurrence, but as it cannot be recognized without autopsy, it may not be so uncommon as the small number of reported cases would indicate.

In 1846 Bowditch\* collected eighty-eight cases of diaphragmatic hernia, and after so careful an examination of many works and journals from 1810 to 1846 he felt convinced that very few cases could have escaped his notice. He subjected these cases to a strict numerical analysis, and dealt with the subject in a most thorough and interesting monograph, which embodied practically everything that had been contributed to that date. Twenty-six of his cases were of the congenital variety.

Livingston† in 1882 collected from the literature 113 cases of congenital diaphragmatic hernia in children under seven years of age, of which the autopsy records were available to him for analysis. He found that the diaphragm was wanting on the left side in eighty-three cases, and on the right side in eighteen. Four times the hernia was in the middle of the diaphragm; twice both sides were open, leaving a piece of the diaphragm in the middle, and once there was no diaphragm.

Bowditch's collection contains one case, originally recorded by Becker, in which there was absence of the mediastinum with double hernia, and he speaks of it as one of the most extraordinary in the annals of medicine. The subject was a child, five years old at the time of its death, who from the age of two years had had gradually augmenting dyspnœa with forcible elevation of the chest, great liability to cough, and some dyspeptic symptoms. At death the heart and liver lay in the right, the spleen and stomach in the left pleura.

A vast majority of cases of diaphragmatic hernia are spurious. In Livingston's collection, a true hernia provided with a sac, occurred only five times. Although hernia of the left side of the diaphragm is much more frequent than that of the right, in the proportion of five or six to one, the true sacculated hernia is found chiefly on the right side of the diaphragm. In Bowditch's collection hernia was found on the right side of the diaphragm alone in eighteen cases, and in eleven of these the hernia was provided with a sac composed of pleura and peritoneum, while the sacculated hernia was present in only three of the forty-one cases of hernia of the left side of the diaphragm. It is not stated in what proportion the sacculated variety was found in his congenital cases.

Bowditch explains the greater prevalence of sacs on the right

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\**Buffalo Medical Journal*, 1853.

†*American Journal of Obstetrics*, 1882.

side than on the left, upon anatomical grounds. He also gives the following reasons why it is that rupture of the diaphragm occurs so much oftener on the left than on the right side:

“First.—Among the more obvious it may be mentioned that the great mass of the liver, partially united as it is to the diaphragm, forms a kind of bulwark to defend the right side of this muscle from undue pressure.

“Second.—The right crus of the diaphragm is longer and stronger than that of the left side.

“Third.—There are two fibrous bands on the right side of the diaphragm which do not exist on the left.

“Fourth.—We have in addition to all these means of support for the right side, the exposed condition of the left side of the diaphragm, and two minor points of interest, *viz.*, two distinct pouches on the left side, one for the spleen, the other for the cul-de-sac of the stomach to rest in.”

Thoma\* ascribes greater influence to the protection afforded by the suspensory ligament of the liver, for during a considerable part of the foetal period, the left lobe of the liver furnishes almost as efficient a bulwark to the diaphragm as does the right, and it is only in later foetal development that less protection is given by the liver to the left side of the diaphragm.

Congenital diaphragmatic hernia is in most instances probably the result of arrest of development. In speaking upon this question with Prof. Mall, he suggested to me that possibly there might be some difference in the development of the two sides of the diaphragm in early embryonic life to account in part at least, for the difference in the frequency of hernia on the two sides, and he has kindly examined his sections of early embryos with reference to the development of the diaphragm. From a study of eleven well preserved embryos, in which the communication in the diaphragm between the pleural and peritoneal cavities are still open, and of nine in which the diaphragm has just been completed, he is able to make the following statement, which forms a most important addition to our knowledge of this subject:

“In human embryos of the second week, the communication between the pericardial, pleural, and peritoneal cavities is very free, and is about equal on both sides.

“In the third week the pleural cavities are beginning to

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\* *Virchow's Archiv.*, 88, 1882.



separate from the pericardial cavity, but their communication with the peritoneal cavity is still as in the two weeks embryo.

“In the fourth week the pleural and pericardial cavities have about separated from each other, and marked changes are taking place in the communication between the pleural and peritoneal cavities: With the shifting of the stomach to the left side of the body in this stage, the right lung has grown more downward than the left, and the bridges of the diaphragm for closing the openings between the pleural and peritoneal cavities are more fully developed on the right side than on the left. The same condition of advanced development of the diaphragm is more marked on the right than on the left side in an embryo of five weeks.

“In an embryo of the sixth week, the communication between the pleural and peritoneal cavities is from two to three times larger on the left side than on the right, being in all specimens 2 mm. on the right side. In later stages the communication on both sides are closed. There was no stage in which the right side was closed and the left open.”

The recognition during life of diaphragmatic hernia is exceedingly difficult. This fact is very evident from the small number of cases recorded in which the condition has been successfully diagnosed. In 245 cases analyzed by Leichtenstern\* the diagnosis was made with certainty or probability in only four instances, in all of which the patients were adults. The matter appears to be even more difficult in the case of infants, for I have been able to find in the literature up to the present time only one instance in which the diagnosis was made during life and confirmed at autopsy. This case is mentioned by Mayer,† as having been observed by Ahlfeld. It was one of congenital hernia in a mature child, who became cyanotic during its baths. The heart could be felt originally in the normal position, later under the sternum and, finally, in the right axilla. The left side of the thorax gave an intestinal tone on percussion. The diagnosis of hernia diaphragmatica of the left side was confirmed by autopsy.

Owing to its great rarity, the disease is apt to be overlooked in considering the possibilities for diagnosis, but even when this is remembered, the condition is not easily distinguished from

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\**Berliner Klin. Wochenschrift*, 1874.

†*Inaugural Dissertation*, Berlin, 1891.

others of far more common occurrence. Very few physicians ever see a single case of this disease, and only a small proportion of those who have seen one case have had an opportunity for comparing it with another. The data, therefore, which we possess for guidance in diagnosis, have been gathered from reports of individual cases, written by almost as many different physicians and scattered through various journals over a period of many years. The symptomatology varies greatly in different cases, but there are certain features which appear prominent in many instances. Only one case is recorded in which the symptoms were studied for any considerable length of time after the diagnosis had been made. Leichtenstern had under observation a case of diaphragmatic hernia of the left side, in a man fifty-nine years old, for fifteen months after the diagnosis was clearly established, and made a most thorough and careful study of its diagnostic features. His paper, comprising the results of this study, contains so much that is of value that I must refer the reader to it; but shall only give here a short summary of the signs afforded by percussion as recorded by him:

“1. On the left side of the thorax, beginning beneath the inferior angle of the scapula there is a cavity-space enclosed by relatively smooth borders which gives a metallic tinkling on percussion.

“2. The extension of this cavity-space is very changeable, sometimes extending to the middle of the scapula, at others only a little above the seventh rib, and to the tenth rib below. Sometimes it reaches to the axillary region, once even to the left sternal border in front, and from this to the third rib.

“3. This cavity-space changes often in a short time, not only its position, but also its form and volume.

“4. The metallic tinkling in the left postero-inferior part of the chest was temporarily absent in repeated examinations, while at the same time, there was deficiency of respiratory sounds and pectoral fremitus in this place.

“5. The cavity-space is frequently partially withdrawn from the thoracic wall, and is now replaced by the lung. It frequently happens that in the upper and lateral borders, vesicular breathing and pectoral fremitus may be obtained and metallic tinkling be absent, when at a later examination the first two are wanting, and typical metallic tinkling exists.”

The presence of these physical signs should be of great aid in

arriving at a diagnosis, but they are not likely to appear in infants where the distention of the intestine gives so constantly a high percussion resonance. Only in cases where the stomach is displaced into the thorax and the intestines have remained in the abdomen could the changeable percussion sounds be expected to appear.

Bowditch has brought together the clinical features of twenty-six cases of congenital diaphragmatic hernia in his valuable numerical analyses. He divides these cases into three classes, *viç*:

“First.—Those who die at birth or immediately afterward. Nearly one-half of these never breathe, nor can they be made to breathe. They cannot inspire, and die instantly, or with a few gasps or sighs. The child may make some feeble attempts at crying, and in very rare cases, may seem to be recovering; but he will relapse and die within a few hours. The heart may be found beating out of its wonted place. The nervous system may sympathize, and shudderings or severe convulsions may occur to close the scene. If with these symptoms we find lividity of the skin, and evident general distress referable to trouble in the respiratory function; if physical signs confirm the rational signs, we may be as sure of our diagnosis as we can be in the case of almost any disease. External malformation such as spina bifida etc., combined with the above-named symptoms should lead us to suspect malformation of the diaphragm.

“Second.—Congenital cases in which the patients live a few months, or a few years, but generally in ill health. Dyspnœa seems to be the most prominent symptom. It is either constant, or the patient is very liable to it upon the slightest exertion; the attacks come on suddenly and as suddenly cease; sometimes position and clothing have much influence.” The whole constitution of the patient seems bad, and the symptoms generally point to a chronic difficulty about the respiratory function; the little patients are at times emaciated and feeble. Auscultation will come to our aid, as in the previous case.

“Third.—There are some who arrive at adult age, notwithstanding there is a very material malconstruction of the diaphragm. It seems almost impossible that such persons should be able to perform any hard work, but such is the case in not a few instances, and the subjects may have at times a degree of *embon-point*. But though thus generally healthy, these individuals are liable, on sudden or severe exertion, to violent and, at times,



prostrating attacks of dyspnœa. These attacks may come on very suddenly and as suddenly disappear. The pulse may be quickened and tremulous, owing to dislocation of the heart. Pain in the side about the region of the diaphragm is not uncommon. Vomiting is frequently seen; but none of these symptoms are equal in value with the physical signs."

The prominent symptoms in my case were: Repeated attacks of violent dyspnœa, coming on suddenly and as suddenly disappearing, accompanied with cyanosis, and ending in pallor, cold perspiration and symptoms of collapse; hyper-resonance of the chest, with feeble respiratory sounds; active movement of gas apparently in the left side of the chest, as well as in the abdomen, the abdomen being at the same time not markedly distended.

With exception of the apparent movement of gas in the left half of the thorax, the above symptoms have been frequently observed in other cases of congenital diaphragmatic hernia in infants, and, if displacement of the heart is added, should excite, at least, a strong suspicion of the existence of diaphragmatic hernia.

853 PARK AVENUE.

#### DISCUSSION.

DR. L. EMMETT HOLT.—This case is exceedingly interesting on account of the long period of clinical observation. Most of such cases are not recognized until the autopsy, and there has been no clinical history.

DR. JOSEPH O'DWYER.—I had such a case some years ago. It was recognized simply because it was supposed to be a case of empyema; and after failing to get pus by needle the chest was opened and the intestine was found. Otherwise, it would never have been recognized.

DR. T. M. ROTCH.—Was there any dulness in the chest in Dr. Booker's case?

DR. BOOKER.—No; there was hyper-resonance. I do not see how we would get much dulness in an infant if there is displacement of the intestine into the chest.

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**Infant Mortality in Paris.**—More than 155,000 children under one year die annually in Paris, the greater number of them owing to neglect on the part of their mothers. The proportion of illegitimate births, which at the beginning of the century was four or five per cent. of all births, is now nearly nine per cent. for France and twenty-eight per cent. for Paris. Among the children of Paris wet nurses the average mortality is seventy-seven per cent.—*Medical Record*.

## SYMPTOMATOLOGY OF LITHÆMIA.\*

BY B. K. RACHFORD, M.D.,

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The most comprehensive definition of lithæmia includes all the symptoms which are thought to be due to an excess of the alloxuric bodies in the body media. Under such a definition it is evident that the symptomatology of this condition must be very complex. In order to avoid confusion by the mingling of symptoms from totally different causes, I shall speak first of the symptoms which are thought to be due to uric acid.

*Uric acid infarction* has been a favorite theme for all writers who have written on this subject during the past ten years. The newly-born lithæmic infant is prone to eliminate an excess of urates in the first days of life. These urates may manifest themselves by the deposit of red sand on the diaper. The urine of these infants contains an excess of urates and also of oxalates; it has a high specific gravity and is very acid in reaction. In such infants the uric acid crystals may be precipitated into the tubules of the pyramids of the kidney and there cause much irritation. In speaking of this deposit, A. Jacobi says: "Its speedy removal is of great importance, for it acts as a local irritant and may give rise to a slight or larger renal hemorrhage, to albuminuria (which is a frequent occurrence, because of the defective construction of the epithelium of the glomeruli), and even to nephritis. Besides, its presence in both the kidneys and the bladder is a ready cause for the formation of renal calculi; indeed, the vast majority of renal calculi and the centres of vesicle calculi consist of uric acid. The consideration of these facts conveys at once the occasion of the necessity of supplying the newly-born with ample quantities of water. Much suffering and illness may thus be prevented."

The following symptoms are commonly observed in the infant as the result of uric acid deposit in the urinary passages: Fever, which may continue for days and be as high as 104° F, and paroxysms of crying with intervening fretfulness, are the most characteristic symptoms; these paroxysms occur at the time of the passage of urine. The urine in these cases may be so

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\* Read before the American Pediatric Society, Washington, May 5, 1897.

irritating as to cause a vulvo-vaginitis in the female infant and a urethral irritation in the male. When such conditions exist the urine is retained by older children as long as possible and then passed with great pain. When paroxysms of crying recur, in an infant with lithæmic inheritances, coincident with the passage of urine so heavy with urates as to deposit a red sand on the diaper, one is justified in making a diagnosis of this special uric acid type of lithæmia.

Quite recently I saw an infant two days old; it had cried almost continuously from a few hours after birth. When I entered the room it was crying bitterly and seemed to be in great pain. The most careful physical examination failed to discover anything abnormal with the organs. The infant's temperature was 104° F. and had been nearly that high for twenty-four hours. On inquiry I learned that this child was born of lithæmic parents and that it had passed urine only once since its birth, and the urine passed at that time was small in quantity and tinged with blood. As treatment, this infant was given a warm bath, a cathartic and plenty of water to drink. Two days later it was convalescent, with no fever, and its renal secretion established. Such cases as this are not uncommon, and I am convinced that much of the elevation of temperature, which occurs in infants during the first days of life, is caused by uric acid deposits in the urinary passages. L. Emmett Holt has given a good description of these cases in a paper entitled, "Inanition Fever in the Newly-born." He says: "the symptoms presented by these infants were a hot, dry skin, marked restlessness, dry mouth, and a disposition to suck vigorously anything within reach—everything indicated great thirst. With a high temperature there was considerable prostration and weak pulse. In the milder cases there was only unusual restlessness and crying. The rapidity with which the symptoms disappeared when nursed or fed was striking."\* Lithæmic children may, as they grow older, continue to suffer from attacks of painful urination accompanied by an elevation of temperature and irritation of the external genitalia. I have now under observation a little girl, whose medical history amply illustrates this clinical type of lithæmia. She inherits from her mother strong lithæmic tendencies. She is a quick-witted, bright-faced, dainty little girl, three and one-half years of age. She is fair skinned, small

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\* Transactions of the American Pediatric Society, 1895, page 63.



and slender of stature, and during her waking hours she flits about, with quick and nervous movement, among the countless toys which the over-indulgent parents have lavished upon this their only child. She commands the constant attention of a nurse, she is nervous, irritable, self-willed, and rules the household, over which she reigns a veritable little queen. I first became acquainted with this little girl one year ago when I was asked to see her in one of her lithæmic attacks, from which she frequently suffered. At that time she had been suffering for three days from painful urination accompanied by an elevation of temperature,  $102^{\circ}$  F. The urinary excretion would be retained as long as possible and would be then passed with a fit of crying that would leave the child fretted and irritated for some time after. The external genitalia were slightly swollen and red, this was produced, no doubt, by the irritating properties of the urine. On the following day this irritation had become a mild vulvo-vaginitis. The urine passed during these attacks was strong with acid and heavy with urates. The child convalesced readily from this attack, but six weeks later she had another, the symptomatology of which was very like the one I have just described. These spells were commonly followed by a slight intestinal disturbance, which manifested itself in nausea, lack of appetite and loose, putrid stools. In the intervals between these attacks she would also frequently have spells of indigestion with nausea, sour stomach and putrid stools. She had at all times a whimsical appetite. She was a small eater, and constantly demanded and received from her parents food, such as meats and sweets, which her physician had directed should be kept from her. During the past six months this child under phosphate of soda, lithia water and a more careful supervision of her diet, has been comparatively free from these attacks. The clinical picture which this case presents is by no means peculiar to infants and children. In adults it is also common to find frequent and painful urination associated with the passage of urine small in quantity (seven to ten ounces in twenty-four hours), high in specific gravity (1030-40) and heavy with urates.

Nocturnal incontinence of urine in children may be a lithæmic symptom resulting from the irritable condition of the urinary passages and the instability of the spinal nerve centres which may occur in these children. If one recognizes the fact that lithæmia

is sometimes the most potent factor in producing the incontinence of urine one will succeed in curing cases of incontinence that have resisted over a period of years all other kinds of treatment. I have under observation at the present time a boy who suffered from incontinence of urine until he was ten years of age. This boy had been treated for years by the best physicians in a number of our largest cities. Under an antilithæmic treatment his incontinence of urine readily disappeared. I wish to note, however, that my experience teaches me that incontinence of urine does not occur in the great majority of lithæmic children, and also that lithæmia does not rank among the most important causes of this neurosis. Yet, it is none the less important that one should recognize the fact that lithæmia is occasionally such an important factor in the production of enuresis that its cure cannot be effected except by treating the lithæmia.

It is not within the scope of this paper to consider the symptoms which result from uratic deposits in the joints and other tissues (gout), or those which are caused by uric acid calculi in the urinary passages (gravel). The symptomatology of these conditions is fully described in every text-book and does not properly belong to lithæmia.

With this outline of the rôle which uric acid plays in the lithæmia of infancy and childhood, we may pass to the consideration of the toxic symptoms of lithæmia, which, as I believe, are due to the alloxan bodies other than uric acid. The chief offenders among these bodies are paraxanthin and heteroxanthin.

*Gastro-enteric symptoms.*—The gastro-enteric symptoms of lithæmia in infancy and childhood are little understood, yet they are of vast importance. In introducing this subject I will relate the history of a case which is an extreme example of the gastro-enteric type of this disease as it occurs in infants.

*Case.*—Infant A., male, born of lithæmic parents. Both families have been gouty for several generations. The only other child in the family, a boy four years of age, has had from infancy severe lithæmic attacks characterized by pain, nausea, vomiting and fever. On February 8th, I saw infant A., in the beginning of what proved to be a severe lithæmic attack. Just two months before I had seen him in a similar attack and then predicted that he would have others. A careful inquiry into the history of this infant develops the fact that he has been having similar attacks at intervals of four or six weeks since he was two months old, and that he had had from birth intestinal symptoms, which I believe were due to lithæmia. All of the earlier attacks

of this infant were attributed to bad milk, and with each recurrence of an attack renewed efforts were made to get more wholesome milk or cream and to have it so carefully prepared that other attacks might be avoided. But the paroxysms recurred, notwithstanding the fact that this infant was taking sterile, wholesome milk, at regular intervals, in proper quantities and properly diluted. The December attack above referred to occurred when the infant was five months old. It was taking at this time a sterile cream mixture, every bottle of which was prepared by the painstaking and intelligent mother. Following this attack I undertook the feeding of the child and from this time on it was fed as intelligently as I knew how to direct. The general appearance of the child was most alarming; it was fretful, emaciated and in a condition of pronounced malnutrition. Following the December attack the infant took and digested its food perfectly. The stools continued normal in color and consistency and the infant gained steadily in weight until on February the 8th, the date of its last attack, it weighed eleven pounds. In the interval between the attacks it had gained four pounds.

As this attack had been predicted, its symptoms were carefully noted from the beginning. On February 8th, the infant refused food, only taking a small quantity of each bottle, and the 1 P.M., bottle was vomited. On February 9th, the infant continued to take only a small portion of each bottle, and again had a vomiting spell at about 1 P.M. February 10th: baby was restless and fretful all night and vomited a portion of a bottle which it took at 4 A.M. During the entire day he was nauseated and refused all food. His evening temperature was  $102^{\circ}$  F. February 11th he was nauseated and vomited at intervals all night. In fact, nothing was retained on his stomach. This morning he looks very ill; his temperature is  $102^{\circ}$ ; he breathes very rapidly with a short panting respiration. This rapid respiration is not explained by any pulmonary condition. There is a disagreeable sickening odor to his breath. He refuses food but drinks water, which is quickly vomited. In the evening his temperature was  $103.5^{\circ}$  and the nausea and vomiting continued. He has been taking  $\frac{3}{16}$  grain of calomel every hour since early this morning, but it is questionable whether any has been retained. February 12th: infant cried almost without interruption the whole night. Took no food. The nausea and vomiting have continued and the breathing is more rapid than before. The odor of the breath is vile. His temperature is  $102^{\circ}$  F.; he has wasted to a skeleton and is a pitiable object to look upon. During the afternoon and evening the calomel and water were retained. February 13th: He retained some cream last night, this being the first food that has remained on his stomach in the last sixty hours. The calomel acted on his bowels this morning at 4 A.M., and again at 6 A.M. Both movements were intensely putrid. During the day and evening of the 13th the infant



retained small quantities of a very dilute cream mixture. His temperature is 101° F.; he is less fretful and breathes less rapidly. I wish here to emphasize the fact that the most careful physical examination of the lungs did not give any clue to the cause of the rapid breathing. February 14th: The infant is convalescing; his temperature and breathing are normal and he takes his cream mixture very readily. The odor of his breath is less disagreeable but he remains fretful and cross most of the time. His stools to-day were oily in character, and I may note that they continued so for two days. March 1st: The infant has slowly convalesced and is now gaining strength and digesting his food perfectly. At the present time he is taking a milk-and-barley-water mixture, to each feeding of which is added a teaspoonful of a saturated solution of phosphate of soda. In addition to this he is taking one grain of salol after each nursing. I have given a detailed history of this patient because I am sure the symptoms were due to lithæmia and because I believe that in many similar cases a diagnosis of cholera infantum, intestinal catarrh, rickets and tabes mesenterica is made and the lithæmic factor altogether overlooked.

A brother of this patient has had the most characteristic lithæmic paroxysms since he was an infant. He is now four years old. About one year ago I saw him in a number of these attacks and made the diagnosis of lithæmia. At the present time under diet and medical treatment these attacks have almost ceased. His severe attacks were characterized by obstinate constipation (which is almost always present in these cases), with fever, nausea and vomiting. The nausea was incessant and attacks of vomiting occurred at short intervals for three or four days. During this time the stomach refused and rejected all food. The nausea and vomiting of these attacks would disappear as suddenly as they came and leave the patient to slowly convalesce during the next few days. Medicine had little influence in shortening these attacks or in hastening convalescence from them. They were best treated by abstinence from food, rest in a quiet place, hot baths, cathartic medicines and water to drink. Many of this child's earlier attacks were attributed to constipation, errors in diet, bad milk and other causes. When I explained to the mother that these attacks might be expected to recur at intervals of every six or eight weeks, without regard to the character of the milk or other such causes, she readily accepted this statement as being in accordance with her observations of the child's sickness. I mention this boy's symptoms to note the fact that formerly he suffered from much the same character of

attacks as his infant brother, and also for the purpose of emphasizing the change which has recently occurred in the character of these attacks. At the present time vomiting is no longer a prominent symptom, although in all of his attacks he still has nausea. Pronounced narcotism and headache are at the present time the most characteristic symptoms of his lithæmic attacks. In short, the gastro-intestinal paroxysms of his infancy are being transformed into attacks of true migraine. Under treatment at the present time there is left of these attacks only a few hours of slight headache and narcotism every six or eight weeks.

In the light of these two cases, which are types of one of the most common forms of infantile lithæmia, I can more intelligibly recite the gastro-enteric symptoms of this condition. Lithæmia may manifest itself in very young infants by attacks of gastric pain associated with rapid breathing, nausea, vomiting and fever. The gastric paroxysms may be so severe that all food is rejected for a period of from one to five days. The temperature may reach  $104^{\circ}$  or  $105^{\circ}$  F., but sometimes in the most severe cases the fever ranges between normal and  $102^{\circ}$  F. In these attacks the infant may be prostrated to the last degree and there may also be much emaciation. Occasionally these lithæmic paroxysms are ushered in by convulsions, which may in time come to be characteristic symptoms of these attacks. These gastric paroxysms are self-limited. In duration and severity they are influenced but slightly by medical treatment. The nausea and vomiting go almost as quickly as they came, but there is left more or less soreness and gastro-enteric irritation, from which the infant or child slowly convalesces. The stools following these attacks are very putrid and in young infants are sometimes oily in character on a strictly milk diet. There may be an interval of from one to six months between these attacks and in the milder cases the infant or child may be almost or quite well during this interval. But unfortunately this is not always so, since some of these patients do not get entirely well between the attacks. A few of these children remain pale and frail looking at all times. They are peevish and hard to please; they are as relentless as they are exacting in their demands. Lithæmic infants and children are mentally precocious, and when ill and peevish between these attacks they exercise this precocity in devising ways and means to secure the constant attention of all around them. From the gastro-enteric type of lithæmia above described, there are

many variations. In children these attacks may occur, as they sometimes do in adults, with little or no elevation of temperature. They may or may not be accompanied by convulsions, headache, gastric pain or dyspnœa. The dyspnœa, when it does occur, is an interesting symptom, since it is not due to pulmonary causes but is, like all the other symptoms, toxic in origin and is to be classed as a nervous symptom. In rare instances vomiting of blood may occur, both in the child and in the adult, but this symptom does not change the prognosis or delay the return of the digestive organs to their normal condition after the attack. In infancy, childhood and adult life, a chronic intestinal fermentation may be dependent upon a lithæmic condition; but in these cases the symptoms, which are always present as a result of the chronic intestinal fermentation, are at times aggravated at irregular intervals into more acute attacks of gastro-intestinal disturbance. These acute gastro-intestinal attacks recur without apparent cause and at more or less regular intervals, in that way breaking in upon the milder gastro-enteric symptoms, which are always present as the result of the chronic fermentation. The gastro-enteric type of lithæmia is quite as common in the adult as in the child. I have seen cases in adults which presented almost the same group of symptoms above detailed in the case of the five months' old infant.

In adults the pain of these gastric attacks may be so severe and the vomiting so persistent that the hypodermic use of morphia is necessary to relieve the paroxysm. As a result many of these patients acquire the morphine habit. I have under treatment at the present time a woman thirty-five years of age, who formerly suffered severely from migraine with slight gastric disturbance. At the present time there is almost no headache with these attacks, but they are characterized by the most intense paroxysms of gastric pain and vomiting. These attacks recur twice a month and can only be relieved by morphine hypodermatically. Following these attacks there is fever and abdominal tenderness, which may last for several days. As the result of these intermediate symptoms she is scarcely convalescent from one attack before another occurs. Diarrhœa sometimes follows these attacks and is looked upon by the patient as a favorable symptom. These cases are common in the practice of every physician and are commonly diagnosed as "gastralgia" or "enteralgia." The milder cases are spoken of as "nervous"



or "hysterical dyspepsia." As these terms indicate, the gastric symptoms of lithæmia in the adult, as well as in the child, may vary from a slight dyspepsia to an attack of pain and vomiting so severe as not only to strike down but even to endanger the life of the patient. In the July, 1895, number of the *American Journal of Medical Sciences* is given an abstract of a case reported by Bary. This patient, fifty-one years old, commenced to have migraine when she was nine years of age. These headaches continued for some time, until suddenly pain appeared in the gastric region. This pain came on almost every day, sometimes several times a day, lasted one or two hours and disappeared suddenly with eructation of gas. During three months while this condition lasted there was no headache, but after the epigastric pain suddenly ceased, migraine began again. Two years later the headaches again ceased for two months, and the epigastric pain reappeared for the same period. This case illustrates one of the marked peculiarities of lithæmia, namely, the substitution of one form of lithæmic paroxysm for another; and it is also noted to call attention to the fact that epigastric pain unaccompanied by nausea and vomiting may be a symptom of lithæmia. In truth, the gastro-enteric symptoms of lithæmia are so diverse that each case may be said to have its own peculiarities, and this is the reason that such an elastic term as "nervous dyspepsia" has been used in describing some of these cases.

*Nervous Symptoms.*—Nervousness in a great variety of manifestations is to be observed in lithæmic individuals. It might almost be said that the entire symptomatology of lithæmia in childhood may be directly or indirectly referred to the nervous system. Infants and children with strong inborn lithæmic tendencies have very unstable, nervous symptoms. The increased reflex excitability of the nervous systems of these children predispose them to general nervous irritability. In fact, nervous irritability is a common symptom of lithæmia at all ages. In adults this symptom is not uncommonly associated with mental depression and other neurasthenic symptoms. The following case illustrates the grouping of these symptoms in lithæmic individuals:

Mr. X. came to my office because of a more or less constant pain in the abdomen. This pain seemed in no way related to the presence of food in the stomach, and was at times accompanied by eructation of gas. He was mentally depressed and so very

despondent about his condition that he could not be convinced he did not have an incurable abdominal disease. He was moody, irritable and peevish, and did not think that medicine would do him any good. Knowing that this man came from a gouty family, and that he had previously suffered from lithæmic headaches and other lithæmic manifestations, I made the diagnosis of lithæmia, and he quickly recovered under anti-lithæmic treatment. In connection with this case I wish to emphasize the fact that mental depression of the most extreme type is very commonly associated with other lithæmic symptoms, and especially with the gastro-enteric type of lithæmia. It is common for these patients to ascribe all of their symptoms to business cares or troubles, while in fact their symptoms are lithæmic in origin, and their worry over their business affairs is but one of the most common of lithæmic symptoms. It is a fact also that overwork may contribute to the development of neurasthenic symptoms in lithæmic individuals, and it is therefore important that one should understand that mental overwork is much more likely to produce neurasthenic symptoms in lithæmic individuals than it is in those who have not inherited this diathesis. It is a good working rule to always search for the lithæmic factor in every case of hypochondriasis and neurasthenia. If you find this factor, you will be much more successful in the treatment of these conditions.

Lithæmic children are commonly mentally precocious, yet precocity as a symptom of lithæmia is little understood. Special note is made of this symptom here that I may call attention to the difference between tuberculous and lithæmic precocity. These conditions are confused in recent writings. Precocity in tuberculous children is fitful and sadly lacking in symmetry. It is always coupled with physical inferiority. These children are frail, anæmic and incapable of sustained physical and mental activity. They are quick at repartee and often have good memories which are developed at the expense of other mental faculties. If encouraged in mental precocity, these children may early in life exhaust their mental energy in the development of a single faculty and then lapse into mediocrity. But these children may fare even worse than this, since they may be irreparably ruined by proud mothers and over-zealous nurses who commence the process of mental cramming even before infancy has passed into childhood. The poorly nourished tuberculous child

is brought forward for the purpose of demonstrating its wonderful precocity, and this over-stimulation of a poorly nourished nervous system may dwarf the child both physically and mentally. Such is the picture presented by tuberculous precocity. This picture is, as a rule, very unlike lithæmic precocity, which is commonly associated with good physical development. At least one may say that lithæmic precocity embraces all those abnormally precocious children of good physique who have inherited from an intellectual, lithæmic parentage, unusually active nerve centres. Such children, if properly restrained during childhood, are capable of the highest intellectual development in after life. Lithæmic precocity, even when coupled with physical inferiority, is not so fitful, so asymmetrical and so short lived as tuberculous precocity. But mental precocity in the human infant and child, whether it be tuberculous or lithæmic in origin, always needs intelligent restraint. Under intelligent restraint the lithæmic child is capable of the highest intellectual development in after life. He is not a degenerate but should be guarded as one threatened with degeneracy. It may be noted that tuberculosis and lithæmia very uncommonly occur in the same patient. It is, in fact, a well grounded belief that lithæmia is antagonistic to tuberculosis. For this reason there should be no difficulty in making a diagnosis between lithæmic and tuberculous precocity.

*Eclampsia* is a classical symptom of lithæmia and one to which little attention has been directed. In this connection the following abstract of a case, reported by Irving M. Snow to the American Pediatric Society in 1893, is of interest. This case was reported under the title "Gastric Neurosis in Childhood," and the clinical history of this child conforms in almost every particular with the gastro-intestinal form of lithæmia above described. The lithæmic attacks from which this child suffered commenced when it was nineteen months old. The most characteristic symptom of these attacks was the initial convulsion. This was followed by from three to five days of fever and vomiting and then rapid convalescence supervened. These spells were periodic; they came and went without apparent cause at intervals of a few weeks. Convulsions continued to mark the onset of these attacks until the child was four years old when the convulsions ceased, but otherwise the attacks were unchanged, except they were more frequent and possibly more severe. After the cessation of the convulsions these attacks



were characterized by "vomiting, fever, hypersecretion and irritability of the stomach, which were independent of dietetic errors or of organic diseases." Following the report of this case, similar cases were reported by Holt, Christopher, Rotch, Seibert, Forchheimer and Caillé, and the opinion was a common one that these cases were very frequently observed in practice, but that their etiology was obscure and their classification uncertain. I have here introduced the abstract of this case and the discussion which followed, for the purpose of emphasizing the fact that eclampsia is not uncommonly associated with other well-marked lithæmic symptoms. I desire to emphasize this clinical relationship since my laboratory experiments have demonstrated that eclampsia is one of the most striking symptoms of lithæmia. In these experiments, which have been elsewhere published,\* I demonstrated that the periodic convulsive seizures, epileptoid in character, which not uncommonly occur as symptoms of lithæmia, are produced by the action of the poisonous xanthin bodies on the nerve centres.

But the fact of greatest importance concerning lithæmic eclampsia is that these convulsions may continue to recur at intervals until finally we may have established the well-known type of epilepsy which has commonly been described as migrainous epilepsy. The term migrainous is used in describing this special type of epilepsy because it commonly occurs in patients who have suffered from migraine. In fact, migraine and epilepsy very commonly alternate in this class of cases. In my previous writings I have spoken of this type of epilepsy as leucomaine epilepsy, because it was produced by the poisonous leucomaines of the uric acid group. In this paper we may more properly describe it as lithæmic epilepsy.

*Lithæmic Epilepsy* † is a distinct type of epilepsy not to be confounded with idiopathic, reflex or fœcal epilepsy. It occurs always in association with other lithæmic symptoms, such as migraine or the gastric neuroses above described. With these symptoms the epileptoid paroxysms may coincide or they may alternate in distinct paroxysms. This form of epilepsy makes but a small proportion of the sum of all epilepsies and is not related to the common forms of epilepsy, such as idiopathic, reflex and fœcal epilepsy, but its comparative infrequency makes

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\* Transactions, Association of American Physicians, 1895 and 1896.

† See paper on this subject, American Journal of the Medical Sciences.

it none the less important as a lithæmic manifestation. Lithæmic epilepsy is for the most part a disease of adult life. It commonly develops in late childhood or adult life as a sequel to migrainous attacks, with which it may afterward alternate. It embraces the cases which have been described as migrainous epilepsy, and some of the cases which have been described as hystero-epilepsy. In the female, lithæmic epilepsy may recur at every menstrual period and, in rare instances, it may begin at puberty and cease at the menopause. The clinical picture presented by these seizures is very like the grand mal type. The initial cry, the general tonic and clonic muscular spasms, the spasm of the respiratory muscles, the spasm of jaw muscles, the frothing at the mouth and contraction of pupils and the subsequent prolonged narcotism may all be present to make a picture of lithæmic epilepsy. Lithæmic epilepsy does not belong to the degenerate types of epilepsy. It is not inconsistent with the highest intellectuality and mental vigor. In later life it is, however, commonly associated with arterio-sclerosis and the symptoms which accompany this condition. Lithæmic epilepsy, while not the most frequent, is yet the most striking and one of the most characteristic symptoms of lithæmia in adult life. Its importance in the study of the lithæmic manifestations of childhood arises from the fact that lithæmic eclampsia, which as above noted is not an uncommon manifestation of lithæmia in infancy and childhood, may be the precursor of lithæmic epilepsy in after life.

*Migraine* is one of the most common as well as one of the most characteristic symptoms of lithæmia in adult life, and it is but little less important as a manifestation of this condition in childhood. These paroxysmal and commonly unilateral headaches recur at more or less regular intervals without apparent cause. They are usually associated with disorders of vision and frequently with nausea, vomiting and gastric pain. They are self-limited and, as a rule, end in narcotism, which produces a profound sleep from which the patient awakens convalescent from the attack. Such attacks are not uncommon in early childhood, and in late childhood these "sick headaches," as they are called, are very common. For a number of years I have given especial attention to the study of migraine as a symptom of lithæmia. Some of these studies I have published under the title of "Leucomaïne Poisoning" in the Transactions of the Association of American Physicians, 1895-96.

I used the term "leucomaïne poisoning" because I found that these migrainous headaches were caused by the direct action of the poisonous uric acid leucomaïnes, paraxanthin and heteroxanthin, on the nerve centres. I have examined a large number of patients with true migraine and I have always found that these attacks were coincident with the excretion in the urine of an enormous excess of these poisonous xanthin bodies. I will here note that in their common factor, leucomaïne poisoning, we have an explanation of the relationship which exists between migraine and lithæmic epilepsy. Other factors may contribute to the production of these paroxysmal attacks. But leucomaïne poisoning is the one essential factor in the production of both lithæmic headaches (migraine) and lithæmic epilepsy. These symptom groups are therefore diagnostic of lithæmia.

I would ask special attention to the fact that lithæmic headaches (migraine), may be divided into two distinct clinical types. First we have the type which may be designated as *sick headache*. In this class of cases we have severe paroxysmal headaches associated with more or less nausea and vomiting. The nausea, vomiting and hypersecretion of gastric mucus are in fact the symptoms which characterize these migrainous attacks as "sick" headaches. The other distinct type of lithæmic headache may be called *migrainous neuralgia*. In this form of the disease we have the severe paroxysmal headache but it is not associated with gastric symptoms of any kind. This division of lithæmic headaches is important from a therapeutic standpoint, since the two types of headache do not yield alike to the same line of treatment.

It may be broadly stated that headache, gastric pain, nausea, vomiting, eclampsia and rapid breathing (asthma) are lithæmic symptoms which may recur in paroxysms and which may be commingled in varying degrees of intensity to make the clinical picture of an individual attack.

*Periodic attacks of severe neuralgia* are of common occurrence in lithæmic patients. These severe neuralgias may take the place of migraine or other lithæmic attacks from which the patient formerly suffered. At the present time I have under treatment a young woman, who is prostrated every four or six weeks with a severe intercostal neuralgia. She suffers intensely from this pain for from three to five days and is then convales-



cent. These attacks are associated with considerable headache but no nausea or vomiting. They have taken the place of the severe sick headache attacks from which this patient formerly suffered. Lithæmic neuralgia is characterized by its periodic recurrence without assignable cause and by its self-limitation; the attacks last but a few days and disappear almost as suddenly as they come. When these neuralgic attacks are continued for a longer time they are probably prolonged by a neuritis which has resulted from the lithæmic poisons. Any nerve in the body may be the seat of lithæmic neuralgia, but the sciatic, the trifacial and the intercostal nerves are the most common sites for this affection. Lithæmic neuralgia is much less common in childhood than in adult life.

*Vertigo* as a lithæmic symptom belongs for the most part to middle and advanced life. It is of little importance in childhood, except as it is associated with lithæmic headaches. The same may be said of *aphasia*. This interesting symptom occurs not infrequently in association with lithæmic headaches and lithæmic epilepsy. It is transitory and not accompanied by paralysis.

*Angio-neurotic Œdema* may sometimes have lithæmia as one of its factors. At the present time I have under treatment the most pronounced case of this kind I have ever seen, in a patient whose family on both sides has suffered from gout and lithæmia for several generations. But angio-neurotic œdema does not occur in childhood. At this period of life the only symptom related to this condition is urticaria, which is not an uncommon manifestation of lithæmia in infancy. In speaking a last word of the nervous symptoms of lithæmia, I wish to say it is my belief that lithæmia may be a factor in the etiology of certain cases of melancholia. And my experience leads me to believe that these cases are much improved if not cured by anti-lithæmic treatment.

*Respiratory Symptoms.*—Dyspnœa may be a lithæmic manifestation. In other writings I have called attention to the fact that dyspnœa is one of the most characteristic symptoms of experimental paraxanthin poisoning. This dyspnœa may be accompanied by a spasmodic contraction of the diaphragm. One finds in these experiments an explanation of the rapid breathing which is a common symptom of the lithæmic paroxysms in infants and children. In one of the cases—Infant A.—previously reported on page 664, I made special note of the fact that the very

rapid breathing of this infant, suffering from a severe attack of gastro-intestinal lithæmia, was not explained by the fever nor by the bronchial disease. Dyspnœa may, as I believe, be a symptom of lithæmia which manifests itself through the respiratory organs, and which is really a nervous symptom. Spasmodic asthma may result from the action on the nerve centres of lithæmic poisons. In a paper read before the Association of American Physicians in 1896, I reported a case of lithæmic asthma, and connected these paroxysms with the presence of poisonous uric acid leucomaines in the blood. Lithæmic asthma occurs only in adults, and may alternate with other lithæmic attacks, or may take the place of other lithæmic paroxysms of former years. Lithæmic asthma is not among the most common manifestations of this condition, but it is of sufficient importance to warrant a careful inquiry as to a possible lithæmic factor in every case of spasmodic asthma.

Pelvic symptoms of lithæmia are spoken of by many writers. Lyman, of Chicago, and Johnstone, of Cincinnati, have expressed the opinion that lithæmia is a potent factor in producing pain in the female reproductive organs, and make special note of this factor as producing certain types of dysmenorrhœa. But these manifestations are beyond the scope of this paper.

*Eczema* is one of the most common lithæmic manifestations in infants and children. Lithæmic eczema is, in fact, a common disease at all periods of life. I wish especially to ask attention to the importance of this symptom, since the successful treatment in this form of eczema depends upon the recognition and treatment of the lithæmic element. Lithæmic eczema may occur in well-nourished children with the family history of lithæmia, and is to be carefully differentiated from scrofulous or tuberculous eczema, since these two types of eczema require radically different treatment. The iron and arsenic used in scrofulous eczema are contra-indicated in lithæmic paroxysms.

*Eye Symptoms.*—Among the ocular manifestations of lithæmia I may mention contraction of pupil and nystagmus. My attention was called to these symptoms by studying the symptoms of experimental paraxanthin poisoning in the guinea pig. Hemi-anopsia, dark spots before the eyes or flashes of light may also accompany or precede lithæmic paroxysms.

*Urine in Lithæmia.*—The urine excreted during a lithæmic paroxysm is as a rule scant and unusually acid in reaction. It

is highly colored, and the specific gravity is, as a rule, considerably increased, and on standing there is a heavy deposit of urates. In the urines passed immediately following lithæmic headaches, lithæmic epilepsies and certain other of the more severe forms of lithæmia, the poisonous xanthin bodies, paraxanthin and heteroxanthin may be found in enormous excess of the normal minute quantities of these substances which are found in the urines of non-lithæmic individuals.

#### DISCUSSION.

DR. L. EMMETT HOLT.—This whole subject is a very interesting one. I do not feel that we have yet gotten to the bottom of all these conditions. There are quite a number of things here that are quite different, and to trace them all to a common origin, it seems to me, is a little farther than we can go at the present time; and I do not know that Dr. Rachford intends that. The gastro-intestinal attacks are exceedingly interesting. I have seen a good many such cases; one recently of very marked type, in a girl four years of age. She had three attacks within as many months. I saw her in the last one. In the first one the physician made an unqualified diagnosis of tubercular meningitis. The attacks were not accompanied with foul stools or other signs of intestinal disturbance which the doctor has referred to; otherwise they were the same, vomiting occurring in paroxysms, profound nervous disturbances, great prostration, etc. Among my own cases gastric symptoms have been the predominant ones, the intestinal symptoms being rather exceptional. Nearly all my patients have been over three years old.

DR A. JACOBI.—The change of symptoms in infants and children, the change occurring with years to which Dr. Rachford alluded, is perhaps best explained by the anatomical change in the abdominal organs, particularly the stomach. It is quite natural for an infant to vomit very readily, and then be rid of part of its symptoms; but as soon as the vertical, or nearly vertical, position of the stomach changes into the more horizontal, and vomiting becomes less easy, the children suffer more from headaches before they are able to vomit. The cases I see are more like those described by Dr. Rachford than those alluded to by Dr. Holt. I see temperature changes almost all the time, together with the other changes and the gastro-intestinal disturbances. I would like to ask Dr. Rachford whether he has examined the urine in such cases regularly, and looked for the presence of nephritis, which I have seen so often—a toxic form of nephritis which in itself is not so dangerous and not so persistent as nephritis from other causes, but which is certainly responsible for some symptoms, and may be responsible for a number of the convulsions?



DR. T. M. ROTCH.—The first class of cases which was spoken of is very interesting—the lithæmic cases of uric acid origin where there is a large amount of uric acid found on the napkin. I have seen quite a number of these cases, and some were cases where the baby was being nursed by the mother. In these cases an examination of the milk has always shown a very high proteid; and a reduction of the proteid in the mother's milk has been followed by immediate recovery of the infant from these symptoms. It did not seem to me that that class of cases were especially of lithæmic origin. Some of them may be, of course; but such rapid recovery, and no recurrence unless the proteids went up again in the mother's milk, were rather against that view. The reduction of the proteids is accomplished in the usual way, by exercise and the management of diet. The set of cases which Dr. Rachford refers to and Dr. Snow reported, I have also found not to show enteric symptoms; they show gastric symptoms, but in all probability the stomach is not involved at all, and they are of nervous origin, and that nervous origin may be lithæmic. As a rule the temperature is sub-normal rather than above normal. They are not such cases as would be usually classed as lithæmic. Where the disturbance is in the intestine they may be of lithæmic origin.

DR. FLOYD M. CRANDALL.—I wish to express my appreciation of the work Dr. Rachford has done upon this subject and the benefit of it in practice. I have not seen extreme cases, like those which Dr. Snow has reported, but have seen the mild types, not only in infants and children, but also in older persons. Not long since a clergyman was about to resign an important parish, and was saved from doing so by the use of Dr. Rachford's salol-coated permanganate pills, which confirmed the diagnosis which had been made of the condition. I have recently seen a number of cases confirmatory of it. A point very interesting to me has been the tendency in these cases to develop migraine in later life; I have recently questioned all cases of migraine as to the existence of these symptoms before the age of ten or twelve years, and they have usually given a history of such neuroses. The question arises, whether it may not be possible by regimen and treatment during the formative and developmental period, to prevent or mitigate the migrainous tendency in later life?

DR. RACHFORD.—Concerning the pathology of this condition I shall have nothing to say here more than to answer Dr. Holt that I do not believe the symptoms described have a common origin; this I intimated in the introduction to my paper. I think that a few of these symptoms are due to uric acid, but that most of them are due to other causes. In my paper I attempted to separate the uric acid symptoms from the toxic symptoms. There is no fallacy more prevalent in the medical mind than that uric acid is toxic. Uric acid and its salts are physiologically inert and are incapable of producing toxic symptoms or nervous symptoms

when introduced in solution into the blood or tissues of an animal. The only pathological changes or symptoms produced by uric acid are due to the insolubility of uric acid and its salts in the body media. Of all the alloxuric bodies, uric acid and the uric salts are the most insoluble. The poisonous alloxuric bodies to which I referred in my paper are very soluble, and are, therefore, readily brought into solution in the blood, and in that way come in contact with the nervous tissues and produce toxic symptoms. But the uric acid salts, by reason of their comparative insolubility, may cause trouble only by being precipitated into the joints or into the other tissues, and are not therefore responsible for the nervous or toxic symptoms. I wish especially to emphasize the fact that the toxic symptoms of lithæmia are not due to uric acid, although uric acid symptoms may occur along with the toxic symptoms of lithæmia. In fact, it is not unusual to find patients who have had both types of lithæmia. At one time they will excrete a large excess of uric acid and suffer from uric acid symptoms; at another they will suffer from the toxic symptoms described in my paper, in which I tried to call especial attention to the fact that the same patient at different times might have a variety of lithæmic manifestations; as, in the case reported, the gastro-enteric paroxysms are sometimes changed into attacks of true migraine, and now and then we may have, especially later in life, a form of epilepsy alternating with attacks of true migraine. I think all of us must have come in contact with these cases of epilepsy, which may be called migrainous epilepsy, because they either supersede or alternate with migraine. The gastro-intestinal type of lithæmia is not confined to infancy or late childhood, but may occur throughout the life of the individual. The alternation and substitution of the various symptom groups of lithæmia is to me strongly indicative that these symptom groups have a common or a like origin. Concerning Dr. Rotch's suggestion, that the amount of proteid food taken had something to do with the etiology of these cases, I can only say that I think he is right in this opinion. There are many questions concerning the formation of uric acid and the other alloxuric bodies which are not definitely settled, but that they are in some way related to nitrogenous metabolism is fairly well established. The more proteid material the body is called upon to metabolize the more likely we are to have an excess of these bodies. One may in this way explain the relationship which exists between lithæmic attacks and an excess of proteids in the food. By lithæmic eczema I mean a type of eczema which may begin in infancy and continue throughout infancy and childhood, even into adult life, and which is associated with other symptoms of lithæmia. This type of eczema occurs in full-blooded, well-nourished children, having a lithæmic ancestry. These cases yield to anti-lithæmic treatment, but not to iron and arsenic. These drugs are in fact contraindicated.

## A CASE OF VARICELLA GANGRENOSA.\*

BY WILLIAM F. LOCKWOOD, M.D.,

Baltimore.

A female child, two years of age, was admitted to the Home of the Friendless, October 13th, 1896.

She was well nourished and it was stated had never been sick. No family history was obtained except that her mother was living and healthy.

There were several cases of chicken-pox in the Home at the time of her admission.

November 13th, she was sent to the infirmary with the eruption on her face and body. She had vomited once or twice, and was put to bed languid and fretful. The next day a wide zone of dusky redness occupied nearly the whole surface of the trunk. This dermatitis, with irregular borders, extended from about the level of the nipples to the waist, a little higher in front than behind. Around many of the varicella marks within this area a rapid ulceration immediately began. Both within the dermatitis area and outside of it, the contents of many of the vesicles became hemorrhagic on the second day.

At the same time bleeding began from the mouth and nose, and continued during the child's illness. The nurse reported that there were no signs of blood in the stool nor in the urine. The skin over the right groin was puffed up with a large effusion of blood, forming a huge bleb. Blood was extravasated in the skin over the pubes and about the genitals.

The hemorrhagic and the gangrenous processes were not limited to the dermatitis zone. They sometimes occurred in tissues which were free of the chicken-pox vesicles; and oftentimes there was no obvious relation between the hemorrhage and the gangrene.

The spots of gangrene varied in size from that of a pea to a surface measuring one inch by two inches. Their depth varied also. On the front and back of the trunk were large patches where the epidermis only was removed, exposing a purplish-red,

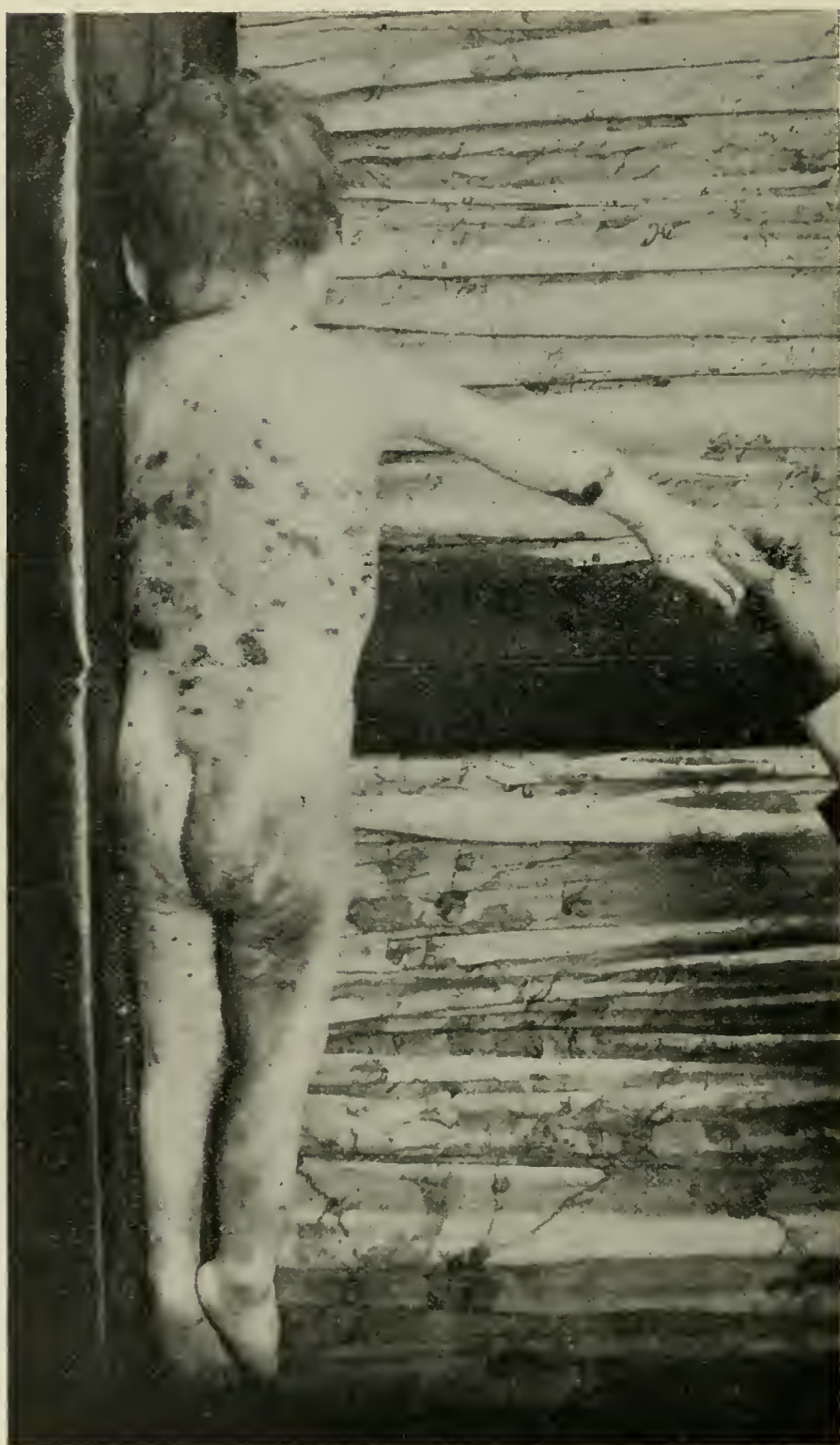
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\* Read by title before the American Pediatric Society, Washington, May 4, 1897.





DR. LOCKWOOD'S CASE OF VARICELLA GANGRENOZA.



DR. LOCKWOOD'S CASE OF VARICELLA GANGRENOSA.

dry surface. These were due to the dermatitis and did not radiate from the chicken-pox vesicles. The deeper spots showed a dry, hard, black eschar in the centre, an ulcerating border and an elevated, inflamed rim.

The extremities were comparatively free of the deeper ulcerations. The head and trunk suffered most, and in the order given.

There was a free purulent discharge from between the lids of the left eye, which was very sensitive to light. It was soon closed so completely by ulceration and swelling of the upper lid that inspection of the eye itself became impossible.

Some of the largest spots of gangrene occurred outside of the dermatitis area—the largest on the inner side of the left elbow. This spot was surrounded by white, healthy looking skin, nearly to the line of ulceration.

The accompanying photographs, taken *post-mortem*, give a good idea of the character and the extent of the lesions.

The child emitted an extremely fœtid odor which was only partly controlled by applications. Its restlessness and ill condition made a satisfactory examination of the chest impossible. Death occurred on the eighth day and was due, it seemed, to broncho-pneumonia. No autopsy.

8 EAGER STREET, EAST.

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**Effects of Phosphorus on Growing Bone.**—Kissel (*Virchow's Archiv.*) records a series of experiments on dogs with phosphorus during the period of growth. The drug was given in small doses in oil. He finds that phosphorus has much stronger toxic properties than usually supposed, and that a disturbance of digestion during its use, though apparently trivial, may have a fatal significance; 10 centigrammes per kilogramme of body weight caused symptoms of chronic poisoning, with marked atrophic process, where bone was being deposited; 6 centigrammes hinders the normal development of bone; 3.3 centigrammes is the largest dose that can be given without harm. In chronic poisoning from small doses there was marked fibrosis with shrinking of liver. No dose of phosphorus had any favorable influence on the growing bone. He concludes that there is no evidence in favor of the use of phosphorus in diseases of bone. —*British Medical Journal.*



## VARICELLA GANGRENOSA : ACUTE NEPHRITIS.

BY LEWIS MANN SILVER, M.D.

Attending Physician Demilt Dispensary (General Medicine), and The Vanderbilt Clinic (Department of Children),  
New York.

Frank MacVey, aged two years, fourteen days, was admitted to St. Barnabas' House on September 25, 1896, coming directly from an institution where he had been under treatment for a prolonged attack of gastro-enteritis, due to the excessive heated term of July and August, now so memorable from its high death rate.

On admission he was very anæmic and presented symptoms of rickets; as he showed no improvement after a week's stay in the ward, he was given an outing in the northern part of New York State during October and part of November, which caused a complete change in his appearance. From this time until the middle of December he remained in good condition.

On December 16th, an outbreak of varicella occurred in the ward, and, in all, sixteen children were attacked, the patient being the fifteenth. His illness began with a sharp attack of diarrhœa on December 27th, and on the following day he became stupid, taking no notice of anything; this condition continued during the 29th, alternating with periods of great restlessness. He was removed to a separate room and placed in charge of a special nurse. At 4 P.M., he was given an ounce of castor oil, which operated in an hour. At this time his temperature was  $103^{\circ}$ ; pulse, 136; respiration, 40.

At 6:30 P.M., he became so restless he was given a mustard bath, five grains of bromide of potassium, and cold compresses to the head. At 7:45 he had a convulsion which lasted twenty minutes; the bromide was continued through the night every three hours, but in spite of this he continued quite restless. At midnight his temperature was  $102.6^{\circ}$ ; pulse, 140; respiration, 44.

December 30th. Early this morning the whole body became thickly covered with the characteristic rash of varicella; 9 A.M., temperature,  $101^{\circ}$ ; pulse, 132; respiration, 28. It was noticed that the mucous membrane of the mouth, and the conjunctiva

were quite congested, for which a wash of boracic acid solution was ordered. During the day the patient remained very quiet and the bromide was discontinued, but had to be renewed again at night. He took his nourishment (milk) well. Five P.M., temperature,  $100^{\circ}$ ; pulse, 128; respiration, 28.

December 31st. The patient has had a fairly comfortable day. At 9 A.M., temperature,  $100.2^{\circ}$ ; pulse, 128; respiration, 24. The rash is still thick; the mouth and eyes quite congested. Five P.M., temperature,  $100^{\circ}$ ; pulse, 124; respiration, 24.

January 1st, 1897. This morning there is noticed around several of the spots circles of congestion, varying from one-quarter to one-half inch in width; the centre of each of these spots become depressed and black. These changes are confined to the face, neck and body. The larger of the areas measures from two and one-half inches to three inches in diameter. Nine A.M., temperature,  $102^{\circ}$ ; pulse, 136; respiration, 28. The congestion of the mouth and eyes still continues quite marked. Evening temperature,  $101.2^{\circ}$ ; pulse, 124; respiration, 28.

January 2d. The child had a very restless night. Three gangrenous areas, measuring from one to two and one-half inches in diameter have appeared on the right side of the neck; the parotid gland is quite swollen and congested; temperature at 9 A.M.,  $101^{\circ}$ ; pulse, 136; respiration, 34. The mucous membrane of the mouth, nose, and eyes still markedly congested.

Nasal irrigations of boracic acid solution are ordered to be given every four hours. The child is in a very weak condition, lying with closed eyes and taking no notice of his surroundings. At my request Dr. Francis Huber sees the case, and concurs in the diagnosis of varicella of a gangrenous type. On account of the marked condition of the child, ammonium carbonate (one grain), is given every hour and spiritus frumenti, ten drops every two hours. Dressings of ung. zinci oxidi are applied to the gangrenous areas. The extremities remain cold most of the time, necessitating the use of artificial heat. As the child passes but slight quantities of urine, it has so far been impossible to procure a specimen for examination, though in some cases the catheter might be used.

January 3d. The gangrenous areas are about the same in size, but darker. Both eyes are so swollen that the child cannot open them; the right parotid gland is more swollen, but

there is no evidence of fluctuation. The mucous membrane of the throat and mouth still very much congested, with a profuse discharge of serum and blood; the gums bleed at the slightest touch. The ammonium carbonate and spirits frumenti continued as before. Nine A.M., temperature, 100.6°; pulse, 120; respiration 22. The patient is growing weaker; two passages of blood and mucus. A small amount of urine was obtained which was examined with the following result: Specific gravity, not measurable; acid; smoky color; thick deposits; albumin abundant; numerous granular casts. Five P.M., temperature, 100.8°; pulse, 126; respiration, 24. No change during the night. January 4th. The patient had a restless night; the nose discharged continuously bloody serum; there were also passages of blood and mucus. Nine A.M., temperature, 101°; pulse, 128; respiration, 24. The child lies in an apathetic condition; the gangrenous areas have increased in size and are indurated; he takes very little nourishment. Pulse weak and thready; extremities cold. The eyes are still closed, while the parotid swelling is much larger. The condition of the child is most pitiable to look upon. Twice during the day he vomited blood and mucus. At 7:20 P.M., he had a convulsion, and at 7:30 he died. An autopsy was refused. Owing to the weakened condition of the child after the eruption became gangrenous, it was thought best not to attempt to take a photograph.

We are led to conclude by this and other reported cases that varicella is not a harmless disease as many think. In a number of cases a nephritis is apt to occur, as shown by cases reported in various journals and the stress laid upon this by Dr. A. Jacobi.

Of less frequent occurrence is the complication referred to above. This is more apt to occur in tuberculous or cachetic subjects.

In this case the infested air of the ward, in view of the large number of cases, might have induced the severe type of the disease.



# AN ANALYSIS OF TWENTY-EIGHT CASES OF TYPHOID FEVER.

BY J. GURNEY TAYLOR, M.D.,

Visiting Physician to St. Christopher's Hospital for Children, Philadelphia.

During six months' service on the Medical Dispensary, from October to April, it was my privilege to see out of 2749 new cases enrolled, 28 cases of typhoid fever in the period of incubation.

I submit an analysis of these 28 cases all of which are known to have run the course of the disease. There were several more cases which very closely simulated typhoid, but on account of meagre histories, and particularly on account of non-return of patients a sufficient number of times, I have eliminated all uncertain data.

In dispensary work it is very hard to make a diagnosis of typhoid in children, who come, perhaps, for one visit and then the parents return and report the condition. In order to follow up as many of these diagnoses as possible, I saw many of the children at their homes and had them sent to the hospital.

Undoubtedly there are many conditions which simulate typhoid closely in children. The rise of temperature may be abrupt; tonsillitis and malaria are the two diseases that seem to simulate it most closely and diphtheria also presents similar symptoms.

There is one case which I would like to call attention to. A girl, eight years of age, came into the dispensary with a temperature of  $103^{\circ}$  F., malaise, headache, vomiting and diarrhoea for eight days. Examination revealed a very heavily coated tongue, dry and brown, hebetude was marked, the spleen was enlarged but not palpable, and there was an eruption, rose colored, which disappeared upon pressure. The child was admitted to the hospital and six days afterward throat symptoms became pronounced and diphtheria developed. The diphtheria was undoubtedly a complication in this case as no throat symptoms were present at first.

In the following table the age of the youngest child is two and a half years. In one of the cases a distinct malarial history was presented but the case ran through a typical attack.

6020 OVERBROOK AVENUE.

ANALYSIS OF TWENTY-EIGHT CASES OF TYPHOID FEVER.

CASES	AGE	SEX	OCCUP <sup>n</sup>	DAY OF DISEASE	HEADACHE	INSOMNIA	CHILLS	MALaise	ANOREXIA	VOMITING	EPISTAX.	DIARRHŒA	C <sup>1</sup> NSTIP <sup>1</sup> T <sup>n</sup>	HERETUDE	TONGUE	ENLARGED SPLEEN	SPLEEN PALPABLE	ERUPTION	TYMPAN-ITIS	COUGH	TEMPERATURE
I	13	M	School	8	..	..	..	Yes	Yes	Yes	Yes	..	Yes	Yes	Yes	Yes	..	..	Yes	..	103.6
II	14	M	"	5	Yes	..	..	Yes	..	Yes	..	..	Yes	Yes	Yes	Yes	..	..	Yes	..	101.6
III	13	M	"	10	..	..	..	..	..	..	..	..	Yes	..	Yes	Yes	Yes	Yes	Yes	..	101.7
IV	4	F	..	15	..	..	Yes	..	Yes	..	..	..	Yes	..	Yes	..	..	..	..	..	101
V	10	M	..	9	..	..	..	Yes	Yes	..	..	..	..	..	..	..	..	..	..	..	101
VI	12	M	School	8	Yes	..	..	..	..	..	..	Yes	..	Yes	Yes	..	..	Yes	..	..	101
VII	8	M	"	8	Yes	..	..	..	..	..	..	..	Yes	Yes	Yes	..	..	Yes	..	..	102
VIII	12	F	"	14	Yes	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	103
IX	15	M	..	14	..	..	..	..	..	Yes	..	Yes	..	..	..	..	..	..	..	..	103
X	8	M	School	14	Yes	..	..	..	..	..	..	Yes	..	..	..	..	..	..	..	..	102.6
XI	12	M	"	8	Yes	Yes	Yes	Yes	Yes	..	..	Yes	..	Yes	Yes	..	..	..	..	..	104.6
XII	8	F	"	8	..	..	..	..	..	..	..	..	Yes	..	Yes	..	..	..	..	..	103.4
XIII	6	F	"	14	..	..	..	..	..	Yes	..	..	..	Yes	Yes	..	..	..	..	..	104.2
XIV	5½	M	..	5	Yes	..	..	..	..	..	..	..	..	..	Yes	..	..	..	Yes	..	104
XV	14	M	Work	8	Yes	..	..	..	..	..	..	Yes	..	Yes	Yes	..	..	..	Yes	..	104
XVI	6	M	..	8	..	..	Yes	..	..	..	..	Yes	..	Yes	Yes	..	..	..	..	..	102.4
XVII	2½	M	..	7	..	..	..	..	..	..	..	..	..	Yes	Yes	..	..	..	..	..	103
XVIII	8	F	..	21	Yes	..	..	..	..	Yes	..	..	..	..	..	..	..	..	..	..	103.2
XIX	7	F	..	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	104.2
XX	9	F	..	10	..	..	..	..	..	Yes	..	..	..	..	..	..	..	..	..	..	104.8
XXI	5	M	..	7	Yes	..	..	..	..	Yes	..	Yes	..	..	..	..	..	..	..	..	104.6
XXII	7	F	..	8	Yes	Yes	Yes	..	..	..	..	..	..	..	..	..	..	..	..	..	104.4
XXIII	7	M	..	8	Yes	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	103.6
XXIV	9	F	..	7	Yes	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	103.4
XXV	6	F	..	9	Yes	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	104
XXVI	7	F	..	7	Yes	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	103.2
XXVII	8	F	School	8	Yes	Yes	..	..	..	..	..	..	..	..	..	..	..	..	..	..	103.2
XXVIII	11	F	"	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	102.6
Per cent.		15 M 13 F			60.7	10.7	14.2	88.5	60.7	25	17.8	53.5	28.5	57.1	92.8	57.1	10.7	85.7	39.2	25	

## HYSTERICIS IN A BOY.

BY A. K. BOND, M.D.,

Clinical Professor of Diseases of Children, Baltimore Medical College.

The patient, a lad about twelve years of age, of quiet manner and a fair degree of robustness, had been taken with influenza, which manifested itself in a fever of  $103^{\circ}$ , some abdominal pain, and slight delirium at night. Under aperients and Dover's powder his temperature and pain were moderated, and sleep was secured during the first two days of my attendance.

On the third day (May 28th) a very puzzling complication set in. The patient would lie quiet for a while, then suddenly rouse, sit up in bed or kneel upon it, and howl or cry in the most extraordinary manner, so that the whole neighborhood was like to be disturbed. Upon questioning as to the cause of his complaints, he would allege that it was "the pain, the pain." Upon further inquiry, he would state sometimes that it was in the hypogastric region, sometimes that it was in the left shoulder, in the region of the scapula, or in both situations. The paroxysm of howling and pain would come on suddenly at short intervals, last a few minutes, and as suddenly cease, quietude or sleep following.

Sometimes scolding would seem to quiet the patient; once the abstraction of half-an-ounce of blood from the seat of pain by a cup was followed by perhaps an hour of relief, but the disorder increased in severity for three days in spite of a number of soothing agents. Especially at night were the paroxysms trying, and the patient and his mother became quite worn out by them. When awake and not howling over the pain, the patient's manner was most provoking, resembling that of a spoiled child or an hysterical woman. The amount of complaint was apparently so disproportionate to the amount of suffering that one's indignation was aroused, yet the odd postures and sudden changes in the patient's manner of lamentation upset the gravity of even his sympathetic mother.

All the time the temperature was moderate, the appetite and digestion good for milk and liquids, and the patient in the intervals of the paroxysms apparently but slightly ill. He had been well purged with innocent drugs at the beginning of the fever, and a purgative pill had acted well on the first day of the



hysterical complication. There was no flatulence or nausea with the paroxysms, nor any other abdominal or extra-abdominal condition which could explain them.

I visited him frequently each day, and sat up the third night, striving in vain to reach a diagnosis. I could only call the paroxysms "hysterical," and that term I am profoundly convinced is a refuge of ignorance with which no thorough physician will be satisfied. The fever was apparently an influenza, but what caused these extraordinary paroxysms, and what would cure them, I could not discover.

On the fourth morning I gave him, at an hour's interval, two aperient pills. The former of these he vomited, and with it he ejected several yellow masses, perhaps two-and-a-half inches long and an inch thick, evidently rounded and compacted by the pressure of the stomach in its narrower parts. I thought they might be milk curds stained with bile, but being in doubt, and very desirous of knowing what they were, I took them home and put a piece under the microscope. They were composed wholly of vegetable cells.

As I had not countenanced the administration of any vegetable food during my attendance, their presence was very remarkable. The mother, however, confessed that on May 28th she had given the patient a banana, which he ate voraciously. This banana material had therefore been in the stomach from the morning of the 28th (Thursday) to the morning of the 31st (Sunday), a period corresponding to the presence of the hysterical paroxysms of pain. As no food-residues were vomited with the moulded pieces of banana, it was evident that during all this time the stomach had been digesting and passing into the duodenum milk and other liquid foods and retaining the unready banana substance. Within perhaps an hour after the rejection of the banana, it became evident that the hysterical paroxysms were at an end, and the patient became free from pain, sleeping to the end of his illness without anodyne, and acting like a quiet, reasonable boy again. After a week longer of occasional visits I discharged him fully convalescent.

A portion of the banana vomited was examined by my colleague, Dr. Whitney, of the Baltimore Medical College. He reported that the banana was in the first stage of digestion, giving the reaction for erythro-dextrine, the first step in the transformation of starch into dextrine.

Careful reflection upon the phenomena presented in these paroxysms leads me to believe that their sudden onset was due on each occasion to an effort on the part of the stomach to force the ill-digested masses of banana through the pylorus. The densely moulded masses, originally broken by mastication, must have received their shape either from close compression by the tightly contracted stomach or from being forced some distance through the pylorus and then driven back again.

It may be that the nerve-supply of the pylorus was in a neuralgic condition, similar to that occurring in other parts of the body during influenza attacks. If there was such a neuralgic hyperesthesia of the pyloric sphincter nerve-supply (I do not refer to inflammation of the mucous membrane, which would probably have shown itself in nausea and anorexia), the sudden forcing into that orifice of closely compressed masses might well have occasioned the hysterics.

The interesting question arises, whether there is a sphincter neuralgia which may affect all those points in the digestive tract at which there are special bands of circular muscle fibres, as at the lower esophageal orifice, the pylorus, the ileo-cecal valve, perhaps at the third sphincter of the rectum, and at other internal locations? If so, may not many cases of hysterics in females and in males—for hysterics are often evidently dependent upon some disturbance in the digestive tract—be due to the forcing of too hard masses through these hyperesthetic sphincter points? If such were the case, the most violent discomfort might (as in my patient) be attended by no signs of indigestion, the mucous membrane covering the painful sphincter being in excellent condition all the while.

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**Ovariectomy in a Child Aged Six.**—Rein (*Rèpert. Univ. de Obstèt. et de Gynèc.*) operated successfully, at Kieff, on a girl aged six. The tumor was a multilocular cyst of the left ovary. On the third day the patient's period appeared. It is noted in the report that puberty was premature in this case, Rein believing that the abnormal phenomenon was the cause of the development of the cyst. The author, however, does not state that any symptom of precocious maturity was noted before the operation. Recovery in this instance was rapid. Childhood and infancy, Rein remarks, are favorable to laparotomy. Fenomenoff has successfully performed abdominal section on a new-born child. —*British Medical Journal.*

# Clinical Memoranda.

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## MELAENA NEONATORUM.

BY S. S. GUERRANT, M.D.,

Roanoke, Va.

Mrs. S., IV. para on March 14, 1897, at 7 A.M. after a labor normal in every particular, the position being R. O. A., gave birth at full term to a female child, weighing about seven pounds.

It was noticed that the child did not cry as vigorously as usual, and that there was considerable mucus in the air passages. After this was blown out and the nates irritated with the palm of the hand, the child having a good cry, the lungs were well expanded.

The family history was good, and the mother's health during pregnancy had been normal, except for two slight falls about the seventh month, and these had caused no apparent trouble. Her previous labors had been instrumental. When the child was twenty-four hours old it vomited a large quantity of dark, ill-smelling material, and in half an hour had a large passage, chiefly of dark, clotted blood. During the day it had three more passages, composed almost entirely of blood. In each there was sufficient blood to go through two napkins and two skirts. Several clots were passed. There was no hemorrhage from the umbilicus, no ecchymosis, and the child was not jaundiced. During the night of the 15th there was one large, bloody passage, and also only one on the 16th. The child was now greatly prostrated, the face was pale, and the pulse too rapid to count. On the 17th there was only one passage, with only a small quantity of blood, and after this the passages became normal. Judging from the bright color of the blood it came from the lower part of the intestinal canal.

The child was kept as quiet as possible and given one grain doses of gallic acid every two or three hours. The lower bowel was irrigated with a weak saline solution, and one minim of the tincture of opium in starch was injected after each movement from the bowels. A few drops of brandy were administered



every hour or two, and the baby nursed well every two hours, the milk being well retained.

After the passages became normal it was remarkable how soon the baby recovered, the loss of blood having been great.

At the age of three weeks the baby had a severe attack of thrush, but at this date (May 10th) the child is well nourished and in good condition.

102 JEFFERSON STREET.

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## VICARIOUS MENSTRUATION FROM A FACIAL NÆVUS.\*

BY I. N. BLOOM, M.D.,

Clinical Professor of Genito-Urinary Diseases in the University of Louisville, Dermatologist to the Louisville City Hospital, Louisville, Ky.

The case I report is now a young lady whom I saw when she was a child. I was then consulted as to the advisability of removing a vascular nævus from the child's face and advised waiting. She is now sixteen years of age, and her mother brought her to me in March, 1897.

The nævus is on the right side of the face, extending down on the nose and involving the upper lip. It is an ordinary vascular nævus, such as is seen frequently, but not quite as dark in color as many, with a liberal distribution of dilated blood-vessels.

The point of especial interest is the following: No inconvenience resulted from the nævus until just before the 23d of March, when suddenly, without trauma or undue rubbing, the place began to bleed. It was apparently vicarious menstruation in a sixteen year old girl. Bleeding began two days after appearance of the menses, and lasted until menstruation ceased. Then it stopped suddenly. For two weeks there was no further bleeding; then for a period of two days the nævus again bled. During this time, which is a point of particular interest, a small teat-like projection appeared on the cheek at about the point at which the bleeding had occurred, and another smaller one on the nose showing where bleeding had occurred. The fluid discharged is blood, dark in color and thick.

Seven days ago I ligatured the little teat-like projection which looked much like a nipple, and contained several sore spots, as

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\* Reported to the Louisville Clinical Society.

she called them. No difficulty was experienced in passing a ligature around it, which was tightly tied, and it took five days for the projection to drop off. It is now reported to me that another and larger projection has appeared at the site of the original one.

The following is a diary of the hemorrhages: March 16th, bled for fifteen minutes, constant stream, thick and dark in color. March 18th, bled only fifteen drops. March 19th, bled five drops. March 22d, has noticed a few drops of blood at various times since the 19th. Menstruation was profuse from March 16th to the 22d.

The case is still under observation. Vicarious menstruation from a nævus in any situation is extremely rare, and the case is of interest on that account.

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**Paralysis After Mumps.**—L. Revilliod (*Rev. Med. de la Suisse Romande*), reports a case where, directly after an attack of mumps, a boy, aged seven, became paralyzed. Weakness of the legs was first noticed, and this was followed by dysphagia and rapid emaciation. The legs could be slightly moved, but he could not stand. There was left facial paralysis. The tongue could be scarcely protruded as far as the lips and deviated to the right. The movements of the palate were sluggish. Swallowing was almost impossible, and liquids swallowed brought on a paralytic cough, so that feeding with the tube was necessary. Respiration was labored and sighing. All four limbs were equally affected. The sphincters, special senses, general sensation, and the vasomotor system were intact. Faradic excitability of the left facial was diminished. Galvanism caused great pain but no contraction. The cranial nerves involved were: the sixth on both sides, the left facial, the right hypoglossal, the external division of the spinal accessories to the neck and the internal (recurrent) branches. Diagnosis: Infantile paralysis could be excluded and diphtheritic paralysis was thought probable, but all inquiries negatived this. There had been no case of diphtheria in the commune for five years; the boy's throat had been examined when the mumps began, and no signs of diphtheria were present; his brothers and sisters all had mumps at the same time. The boy rapidly improved, and was quite well in about six weeks. It is not surprising that mumps, being an acute specific disease, should be followed by paralysis; nevertheless, only one other case has been reported.—*British Medical Journal*.

# ARCHIVES OF PEDIATRICS.

DEVOTED TO THE

DISEASES OF INFANTS AND CHILDREN.

SEPTEMBER, 1897.

Edited by FLOYD M. CRANDALL, M.D.,

*Adjunct Professor of Pediatrics, New York Polyclinic ; Visiting Physician,  
Children's and Infants' Hospitals.*

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## THE PATHOLOGY OF INTUSSUSCEPTION.

The Hunterian Lectures of the present year were delivered by Dr. D'Arcy Power who selected for his subject the pathology and surgery of intussusception. These three lectures form one of the most complete and scientific monographs on intussusception which has appeared in England.

The condition is studied from the standpoint of anatomy, physiology, pathology, and the clinical manifestations. The author believes that such study renders the assertion legitimate, that spontaneous ileo-cecal intussusceptions occur where the colon is considerably larger than the ileum, and is so unduly movable that it readily allows itself to become invaginated when once the process has begun. This variety of intussusception is essentially an affection of childhood, and such an undue increase in the width of the colon implies either a congenital abnormality or an unduly rapid growth, for at birth the diameter of the large intestine is practically the same as that of the ileum. Such a rapid increase in the width of the large intestine may, perhaps, in some instances, render the ileo-cecal valve less competent to guard the end of the ileum, because the valve is not capable of very rapid growth if it is to be firm, but this is probably a factor of rare and subordinate importance.



Though anatomical peculiarities are important factors in the production of an intussusception, the physiological factors are no less important, for they apply in all probability to every form of spontaneous invagination, whether it is of the enteric variety, the ileo-cecal, or the colic.

The physiological factor is much less easy to specify than the anatomical, for it is almost certainly an individual peculiarity. It may be stated broadly, however, that as regards the ileo-cecal portion of the intestine, the increased mobility, coupled with the unduly rapid growth in the width of the large intestine, is probably associated with increased and irregular peristaltic movements of the large intestine. Inco-ordinate movements are of very frequent occurrence in children. They are most common at the instant when the child drops off to sleep and during the act of awakening. They occur both in the voluntary and in the involuntary muscles, and are due, as physiologists think, to a contraction of the interfibrillar sarcoplasm, while the ordinary tetanus and twitch is caused by an additional shortening of the contractile fibres.

This theory explains why the symptoms of intussusception so often appear at the instant when the child awakens, why it is that boys rather than girls, and the most active and the best grown children are attacked, as often as those who suffer from chronic inflammatory affections of the alimentary canal.

The cause of intussusception is obscure, but clinical evidence shows that it may be produced mechanically, though the spontaneous form is the more common. Among such mechanical causes are direct injury to the contents of the abdomen or sudden and violent muscular efforts of any kind. It is no matter of surprise that such causes should produce an intussusception, for any of them might lead to a sudden and limited constriction of the intestine, associated with an active peristaltic movement of a neighboring portion sufficient to draw the receiving layer of the gut over the contracted portion, which then becomes the apex of the intussusceptum.

As soon as the intussusception has been started the anatomical peculiarities again become of paramount importance, for they determine the character of the intussusception. In the ileo-cecal forms a wide colon with few and simple ileo-colic folds, devoid of lymphatic glands, will allow the intussusception to run a chronic course, even though the amount of bowel invaginated is very great. Complex fossæ, with numerous glands at the ileo-colic gland prolongations of mesentery along the end of the ileum will, no doubt, so far steady the ileum as to render its intussusception less likely. But if it should occur, the additional amount of tissue invaginated will render the impaction so peculiarly tight that if gangrene is not produced at once, early adhesions will be formed and the intussusception will soon become irreducible.

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#### JOINT PAINS FOLLOWING ANTITOXIN.

In a valuable article on diphtheria in a recent number of the *Annals of Gynecology and Pediatrics*, Dr. Frank L. Morse refers to the joint pains which occasionally appear after the administration of antitoxin. They occurred in the author's experience seventeen times among 1972 children suffering with diphtheria and treated with antitoxin at the Boston City Hospital. The origin of such a complication is, of course, somewhat uncertain, but the fact that with but two exceptions it was accompanied by an antitoxin eruption, suggests a common relation between the two. The joints affected were in some cases swollen and accompanied by a slight amount of synovial effusion, but they differed from true rheumatic pains in being of a shorter duration, rarely lasting over four or five days in time, and in most cases being uninfluenced by the salicylates given internally.

The joints of the lower extremities are more frequently affected than those of the other parts of the body, and, unlike the antitoxin rashes, they are usually accompanied by a considerable rise in temperature, the temperature sometimes reaching 101°.

They seem to run a well defined course uninfluenced by any treatment. For the lack of any known specific the salicylates were used by Dr. Morse with the external application of winter-green oil. In the majority of cases they had scarcely any influence, and morphine was given to control the pain. They are uncomfortable and painful while they persist but are usually of short duration and have no after effects.

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Two papers of great interest will be found in the present number upon conditions seen in newly-born infants. One is marked by profuse and usually fatal hemorrhages from the cavities of the body together with signs of septic infection. According to the very careful observations of Dr. Davis, it is due to pre-natal infection. His observations were undertaken for the purpose of determining the exact nature of that infection and are of much scientific value, for the knowledge obtained by them is the first step to rational methods of prevention.

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The paper by Dr. Booker describes a condition of decided rarity. It is quite possible, however, that it is less uncommon than it might seem, for it is usually detected only at autopsy. No case of the kind yet reported has been accompanied by so complete and extended a clinical history. This together with the excellent autopsy report renders the case one of great practical interest.

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The two cases of varicella gangrenosa, reported in this number by Dr. Lockwood and Dr. Silver, clearly show how grave a complication may be encountered in a usually simple disease, and demonstrate the axiom that no disease, however mild, can be regarded as free from possible dangers. It is, indeed, strange that varicella, the mildest of all the infectious diseases, should sometimes present so grave a complication. While gangrene of the skin is not peculiar to varicella alone, being in its nature a



gangrenous dermatitis, it is certainly more common than in the other infectious diseases. Its course and peculiar characteristics are admirably shown by the two cases reported.

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That excellent journal, the *Annals of Gynæcology and Pædiatry*, has made a radical change in the appearance of its cover, and the change it must be said is a decided improvement. We would commend its wisdom in changing among other things, the spelling of its name and shall henceforth follow its own lead and refer to it as the *Annals of Gynecology and Pediatrics*.

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#### A NEW WORK ON CHILDREN.

Those interested in children will be interested to learn that another volume is to be added to pediatric literature. The Medical Gazette Publishing Company announces a book on children to be issued in September, written by Dr. Samuel W. Kelley, Professor of Diseases of Children in the Cleveland College of Physicians and Surgeons. As Pediatricist to the Cleveland General Hospital his course of six lectures in the hospital training school met with such marked approval that it has been decided to publish them in book form.

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**Infection through Books.**—At a recent meeting of the Société de Biologie, du Cazal and Catoin (*Münchener medicin. Wochenschrift*) detailed the results of an investigation to determine whether books were capable of transmitting contagious diseases. The streptococcus, the pneumococcus, the diphtheria-bacillus, the tubercle-bacillus, and the typhoid-bacillus were thus studied. Animals inoculated with cultures prepared from books contaminated with the products of the various conditions in which the organisms named were found developed the given affection. It is thus necessary to practise disinfection of books that have been used or in any way contaminated by persons suffering with infectious diseases.—*Medical News*.

## Bibliography.

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**Teratogenesis: An Inquiry into the Causes of Monstrosities; History of the Theories of the Past.** By J. W. Ballantyne, M.D., F.R.C.P.E., F.R.S.E. Edinburgh: Oliver & Boyd. 1897. Pp. 1.—62.

This little book contains three papers on the various theories that have been held during past ages on the mode of production of monstrosities. They were contributed to the Edinburgh Obstetrical Society and are reprinted from the *Edinburgh Medical Journal* of the past year. Although originally designed by the author as a part of a larger work, they form a complete work in themselves, being devoted to a history of the teratogenetic theories of the past. The work shows a vast amount of research among ancient writings and is a most scholarly production.

The more ancient theories are divided into three classes, supernatural, physical and mental. The first of these held sway for many centuries but even in ancient times supernatural causes were not regarded as the only ones producing monstrosities. Among the Hebrews, Greeks and Romans the author clearly shows that theories of maternal impressions were not unknown. This will be a surprise to many who regard the theory as purely modern. This idea it would appear is to a certain extent true and the theory has a distinctly modern side.

The third lecture is devoted entirely to the subject of maternal impressions which is dealt with largely from the historical point of view. In conclusion, this portion of the subject the author summarizes by asking two questions: (1.) Does a definite impression upon a pregnant woman's mind often or ever cause a defect in the fœtus closely resembling the thing producing the impression? and, (2.) Has the state of the mother's mind during gestation any effect upon her unborn infant's development?

The first question the author answers in the negative, and the second affirmatively. He has very carefully examined the evidence upon which several alleged cases have been founded, and has had opportunities of attending confinements in which all the elements regarded as suitable for the production of the

results of an impression were present and in which the children were free from anything at all resembling the impression. He has also very fully acquainted himself with the voluminous literature of the subject. The conclusion drawn is that the cases which have been advanced to prove the potency of material impressions have been accidental coincidences, and not the effects of the alleged causes. Their great number may be adduced to prove that the doctrine must contain an element of truth; but it has to be pointed out that, numerous as they are, the cases in which nothing of the kind happened are vastly more numerous. Further, no adequate scientific explanation of the *modus operandi* of such impressions has ever been advanced, though this is not a point upon which great stress can be laid.

The work concludes with an extensive bibliography, no less than 381 authors being cited. The book is not only very interesting for general reading, but is of considerable value for reference.

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**Reference Book of Practical Therapeutics.** By Various Authors. Edited by Frank P. Foster, M.D., *Editor of the New York Medical Journal and of Foster's Encyclopædic Medical Dictionary.* In two volumes. Vol. II. New York: D. Appleton & Company. 1897. Pp. 1.—618.

The second volume of Dr. Foster's great work is fully equal to the first and completes, it is no exaggeration to say, the most satisfactory work on practical therapeutics which has yet appeared. The work is devoted exclusively to therapeutics and differs materially from ordinary works on *materia medica*. It is practical in the extreme, and its arrangement in the alphabetical plan renders reference very easy.

The articles of particular interest to the pediatric practitioner are those on thyroid treatment and serum treatment. The article on thyroid treatment is of considerable length and presents most admirably our present knowledge upon that subject and the most recent views upon the uses and doses of thyroid extract. More space is assigned to serum treatment than to any other subject. It presents very concisely the results obtained



thus far by the use of the various serums and presents exceedingly well the present status of the treatment. The work as a whole is extremely liberal in the space devoted to the management and treatment of infants and children.

The indexes constitute a feature deserving particular mention, 160 pages being devoted to them. A work of this character, notwithstanding its alphabetical arrangement, would suffer seriously under poor indexing, while such admirable indexes as are here found add tenfold to its value.

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**Changes in the Nervous System in Diphtheria.**—Pernice and Scagliosi (*Rif. Med.*) examining the nervous system in cases of death in the early stages of diphtheria find that the principal changes are to be seen in the brain, the cerebellum, spinal cord and nerves (the sciatic) being affected to a lesser degree. In the sciatic nerve there was no true alteration of the fibres, but merely a hyperæmia of the perineurium and endoneurium. Most of the changes seen in the brain were referable to more or less grave disturbances of the circulation or parietal vessels: inflammatory or degenerative changes with hemorrhage; atrophic degeneration of the cells of the cerebral cortex and anterior horn of the spinal cord especially affecting the protoplasmic prolongation of the cells. Similar initial changes were seen in Clarke's column. The authors believe that the point of departure of these changes is to be found in vascular changes due to the diphtheritic toxin circulating in the vessels.—*British Medical Journal*.

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**Adenoid Growths in Children.**—Eustace Smith, (*Lancet*), says that naso-pharyngeal adenoid growths are common in infancy as well as in childhood. They may even be present at birth. At this early age it is uncommon for them to give rise to the ordinary symptoms of nasal obstructions. Such growths should always be suspected if the infant's nose be broad at the bridge and faintly dimpled on each side at the upper border of the inferior lateral cartilage, and especially if there be noticed any retraction in the inferior region of the thorax. Persistent snuffing in infants is no sign of syphilis in the absence of other symptoms, but rather of adenoids.—*Buffalo Medical Journal*.

## Current Literature.

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### HYGIENE AND THERAPEUTICS.

**Brown, Bedford : New Methods of Resuscitating Still-Born and Feeble-Born Infants.** (*Therapeutic Gazette.* 1897. Vol. xxi., No. 6.)

For a clear comprehension of the pathology, peculiar features, and symptoms of still-birth and feeble-birth, it is necessary to divide the subject into three heads: the still-born, the feeble-born, and the dead-born.

Between all of these forms there is a marked distinction; and yet in certain respects they bear a considerable resemblance to each other. It is necessary that we should have a clear conception of what is meant by the term still-born. Does the term apply indiscriminately to a dead-born infant and equally to a mere feeble-born infant? The term is really applicable to neither condition, but to a state where all the vital functions are in a state of temporary suspension.

The general features of the still-born infant present all the indications of suspended animation; but this suspension, apparently profound, is only temporary, and vitality can be fully restored by proper means. In the still-born no arterial pulsation can be detected. The vital functions of cardiac action, respiration, and it may be secretion, reflex action, sensation, nervous power of the great centres, the brain, medulla, and spinal cord, and vaso-motor system are in a state of temporary suspension. Here then is a very striking resemblance between the general features of the still-born and the dead-born, and the difference can only be ascertained by the observation of certain symptoms, and by proper tests.

In defining the difference between the two conditions the author makes the following signs the ground-work of diagnosis:

In both conditions the vital functions are in a state of absolute suspension—in the dead-born, permanently; in the other, temporarily. Again, in the one the vital functions cannot be resuscitated, while in the other they can be restored. The general condition of the still-born infant bears an exceedingly

close resemblance to that of actual death. The cardiac sounds are absent and there is entire suspension of the pulse; the muscles are perfectly limp and relaxed; the function of respiration is absolutely suspended; yet the vital spark is retained and capable of being restored to vigorous life.

The author defines the feeble-born, which is often mistaken for the still-born, as a state in which there is only a partial suspension of the vital functions, as the function of circulation, respiration, sensation, volition, reflex action.

The cardiac sounds are barely perceptible; the function of respiration amounts to a mere occasional sigh, or gasp; the reflex functions of the cord are greatly impaired, and so are the functions of sensation and muscular or voluntary action. The power of swallowing is usually absent; the pulse is so feeble as to be scarcely perceptible; the cardiac sounds are exceedingly faint and can be barely detected.

This is the feeble-born infant. It is a state which we must not confound with that of the still-born. Then how shall we distinguish the dead- from the still-born? Not by the suspension of cardiac action, respiration, reflex action, voluntary action, the function of sensation, for there is absence of all these functions in both conditions.

For immediate purposes of diagnosis probably extreme reduction of temperature of the dead-born infant, the temperature rapidly falling to the standard of the surrounding atmosphere, constitutes our most certain test. The temperature in the rectum of the still-born may fall to a slight subnormal degree, say two or three degrees, but never to the extent of that found in the dead infant. The fœtus has for nine months lived the life of an amphibious animal, and possibly from this cause after birth it can withstand a suspension of vital function longer than ordinary cases of asphyxiation.

The physicians of the London Association for the Rescue of the Drowned make a statement that after four minutes of immersion and asphyxiation the restoration of life becomes impossible. The author is sure that he has seen the still-born infant, when there was complete suspension of cardiac action and respiration for a period of twenty or more minutes, resuscitated and developed into a healthy childhood. Indeed it is difficult to decide what length of time a still-born infant may remain in a state of asphyxiation and recover. And there is one all-impor-



tant rule to govern us in the management of these cases which should never be dispensed with, and that is never to relax our well-directed efforts at resuscitation until the temperature in the rectum of the infant falls far below the normal, say ten, fifteen or twenty degrees below the normal standard. Then we may know that it has reached a degree incompatible with life. His rule is to test the temperature in the rectum every two or three minutes. If that remains near the normal standard he has positive encouragement to persevere in his efforts; if it suddenly falls ten or fifteen degrees he then has assurance that the case is hopeless.

There is another sign which should govern us in discriminating between the dead- and the still-born, and that is the state of the pupil. In the dead the pupil is widely dilated, while in the still-born it is but little, if at all, relaxed.

In his obstetrical practice during the past six or eight years, in all cases of still-born and feeble-born infants under his care, the author has experimented very carefully and made very accurate observations on the hypodermic method of treating these cases. He has found the subcutaneous medication the most prompt, certain and successful method, both for the restoration of the still-born and feeble-born. He has found it, he affirms, the most convenient, easy of application, and consumes less time than any other method.

The system of the still-born and feeble-born infant responds more promptly and energetically to subcutaneous treatment than any other.

The materials for treatment are always at hand and convenient. Of course these little creatures are incapable of swallowing either nourishment or medicine, and the chief and only avenues left are through the skin and intestines.

In all cases of still-born infants, whether the infant be dead or only still-born, the author's method is to insert in each arm by hypodermic syringe four or five drops of whiskey and a single drop of tincture of belladonna. If the infant is only still-born the nervous and circulatory system will respond quickly and promptly to the stimulant action. If the infant is dead beyond resuscitation there will be no response whatever. But if there is no response, or a very feeble response, he goes still further by injecting a drachm or two of warm, sterilized water under the skin, and about two drachms with a drop of aromatic

spirits of ammonia into the intestines, and then awaits the result. In his experience, if these measures fail to produce reaction, it constitutes a fair test of the existence or absence of vitality. If the temperature continues to decline in the body of the infant while these measures are in progress, we may rest satisfied that the vital spark has taken its flight.

The first indication of a response to the action of the hypodermic remedies in these cases of profound asphyxiation is very soon present after the hypodermic. The muscles of the eyelids contract, and the eyes, previously closed, suddenly open; then the respiratory muscles are brought into rapid action, the glottis is expanded, air is inhaled into the lungs and suddenly exhaled, forming the shrill cry of the new-born infant.

These phenomena illustrate to us the energetic action of the stimulants on the great nervous centres, the brain, medulla and spinal cord. Then follows the development of cardiac action and pulsation at the wrist, which were previously dormant. In these cases he has always observed the development of reflex action in the respiratory nerves before that of cardiac action. Invariably following restoration of respiration there was development of cardiac action; they followed each other as cause and effect.

In cases of marked cyanosis he has found subcutaneous injection of warm water at a temperature of 102° or 103° flushed the circulation, aided in the process of oxygenation, and stimulated the action of the heart and increased temperature.

In the past years I have fairly tested all of the usual methods in vogue for the resuscitation of the still-born and feeble-born infants, as artificial respiration, the rapid reversal of the body of the infant to upright and the reverse positions in the air, Dr. Le Bordis' late suggestion of alternate withdrawal of the tongue, immersing the infant alternately in warm and cold water; but I infinitely prefer the method of hypodermic treatment, and this is to be followed by the application of dry heat. The application of dry heat may be made by means of the gum-elastic bag partly filled with hot water, over which a double blanket is laid, and on this the body of the infant is placed and the soft blanket folded over it. The hot-water bag generates ample heat around the infant to constitute an efficient incubator, and may be arranged in a few moments in the absence of a regular apparatus. If necessary, the hypodermics may be re-

peated as required while the infant is subjected to this artificial heat, until it regains the power of deglutition, when a drop each of aromatic spirit of ammonia, tincture of belladonna and brandy may be administered in milk or tea until the circulation and temperature are established.

**Kohts : The Treatment of Diphtheria and the Results in the Strasburg University, Children's Clinic.** (*Jahrbuch f. Kinderheilkunde*, B. xlii., H. iii., iv.)

The clinic is remarkable for its conservatism, neither intubation or the serum treatment is employed. The treatment is local and general.

The diphtheritic exudate is removed without laceration of the tissue, and the germs are then destroyed at the site of operation.

The membrane is removed by means of an application of a 10 per cent. papayotin solution. When the parts are clear, the air of the sick room is saturated with a spray of  $7\frac{1}{2}$  per cent. chloride sodium in glycerine and water. Ice is applied locally and pieces of ice are given the patient.

The general management consists in over-feeding, in keeping the patient warm, and in giving as little internal medication as possible.

Intubation is not practised because intubated children cannot be fed well. A strong point is in the over-feeding. Milk, eggs, meat, bread and alcohol are given in large amounts. If there is resistance to the feeding, the nourishment is forced in by the use of a tube.

The results of the treatment are as follows: Among 658 cases observed between 1889 and 1893, the mortality varied between 19.7 per cent. and 26.6 per cent. Trachæotomy was performed upon 397, of these the mortality in different years ranged between 25 per cent. and 50.4 per cent. In 261 non-operative cases the death rate was from 6.9 per cent. to 16 per cent. The average death rate in the trachæotomy cases was 44.3 per cent. The average death rate in the non-operative cases, 14.6 per cent.

No case of un-complicated nasal diphtheria died from secondary general intoxication.



**Roos: Mercurial Ointment in the Treatment of Croup.**  
(*Jahrbuch f. Kinderheilkunde*, B. xlii., H. iii., iv.)

The author quotes Fortell who rubbed twelve grammes of mercurial ointment (one-third quicksilver) in the skin of a twelve year old boy who had croup with intense dyspnœa. The results were surprising. In a few moments the dyspnœa subsided and recovery followed without further disturbance. Five other cases were reported by Fortell in all of which the results were as satisfactory.

The author had a patient three years of age who suffered four and a half hours with severe croup. Ten grammes of mercurial ointment were brought into use and in ten minutes the dyspnœa had subsided. In one and one-fourth hours the dyspnœa again appeared and was relieved permanently by five grammes of the ointment.

It is advised that ten to twelve grammes be used at one time and in rebellious cases when daily inunctions are necessary, a bath should be taken before the treatment is begun.

Neither Fortell nor the author had observed symptoms of mercurialism in any of these cases. All the cases treated were plain idiopathic croup.

**Rehn: Tussol in Whooping Cough.** (*Jahrbuch f. Kinderheilkunde*, B. xlii., H. iii., iv.)

The use of tussol in sixty cases of pertussis exerted in the majority of the cases a rapid and favorable influence in controlling the worst symptoms, chief of which are the number and severity of the paroxysms, the vomiting and the loss of appetite. The duration of the attacks under its use ranged from three to five weeks. The dosage employed was as follows:

1 year	.	.	.	0.05	—	0.10
2 and 3 years	.	.	.	0.10		
3 to 5 years	.	.	.	0.25	—	0.50

The drug was administered in solution flavored with syrup of orange.

**Parker, W. T.: Ferratin in Tuberculosis.** (*American Therapist*. 1897. Vol. vi., No. 1.)

In a paper on Normal Horse Blood Serum in the Treatment of Tuberculosis, read before the Section of State Medicine at the

meeting of the American Medical Association, speaking of the treatment of tuberculosis, the author says that in those cases where tuberculosis has been successfully treated by therapeutic methods, iron has been the most valuable remedy. As every one knows the preparations of iron are very numerous, some of them positively harmful, others inert and useless, while a few are capable of being readily assimilated. Of this kind, ferratin is one of the new remedies recommended by the committee of revision for adoption into the new fifth edition of the Russian Pharmacopeia (*Chemiker Zeitung*, 31, 1897).

This is an organic iron compound of albumen and tartrate of iron, forming a definite iron albuminic acid; it contains 7 per cent. of iron, is readily absorbable, does not constipate and has no untoward effects. On the testimony of its discoverer and others, it is identical with the natural ferruginous element of food, absorbed in the system and stored in the liver and other organs as a reserve iron for blood formation. Lately this preparation has attracted considerable attention, not only in Europe but in this country, so much so that its future success would seem assured.

**Morse, Frank L.: The Treatment of Diphtheria.** (*Annals of Gynecology and Pediatrics*. 1897. Vol. x., No. 7.)

The three cardinal points in the treatment of patients ill with diphtheria, the author believes are 1st. Antitoxin. 2d. Stimulation. 3d. Irrigation. In regard to stimulation it can be said, that alcoholic stimulation particularly in the form of brandy or whiskey is of inestimable value. Further medicinal treatment may be also employed depending upon the symptoms in each individual case. For irrigating the throat and nose many solutions have been tried, but the one almost entirely used at the Boston City Hospital at the present time, is a hot normal saline solution. The patient's throat and nose are washed out every four hours. It is almost wholly mechanical in its action, removing the membrane and mucus secretions present in these passages, which effect is best obtained by having the irrigating fluid in a fountain syringe with a fall of about three to five feet. The relief obtained by an irrigation properly given is considerable. Other solutions used have been a weak solution of corrosive

sublimite, 1-10,000, a 1-1000 solution of permanganate of potassium, chlorinated soda wash, solution of thymol and a 1-80 solution of tincture of myrrh, but little is to be gained from any of these which is not obtained by the normal salt solution, except in those cases where the discharge is foetid, some of the disinfectant solutions are more effective.

The antitoxin used in the hospital has been that manufactured by the Boston Board of Health, and has invariably proved of a high quality. As is generally the now accepted rule it has been administered by the standard of units, 1000 units being the ordinary dose in a given case of a child two to five years of age, with a moderate amount of membrane on each tonsil. This has been increased to 1500 units in a child five to ten years, and 2000 units in an adult with the same proportionate amount of membrane. As to the extent of membrane as covering each tonsil, uvula and palate, the dose increases relatively to the amount of membrane present. To children under two years of age the dose varies from 100 units to a child one month old, upward to 1000 units at two years of age; but in all cases, the amount of antitoxin injected depends upon the amount of membrane rather than upon the age of the patient.

The repetition of the antitoxin is indicated in many cases but is rarely repeated in the first twenty-four hours. If the membrane has become sharply defined or undermined around the edges, or has commenced to roll off in places, unless very extensive in amount, the antitoxin is not repeated. If on the other hand the membrane has extended to the uvula or involves the soft and hard palate, or if there is much glandular enlargement, with a marked septic odor and a profuse nasal discharge, a second and even a third or fourth injection may be given at intervals of twenty-four hours each. In all cases, however, after considering the age of the patient, the repetition and amount of antitoxin injected is dependent upon the amount and character of the membrane. Of the 1972 cases investigated, 170 cases received a second injection, twenty-four cases a third injection and two cases a fourth, and the author alleges that in no instance has any ill effect ever followed the injection of antitoxin.



## SURGERY.

**Power, D'Arcy: Treatment of Intussusception.** (*British Medical Journal.* 1897. No. 1887.)

Intussusception is a condition which brooks no delay in its treatment, for something must always be done at once except, perhaps, in those slight cases which are indistinguishable from severe colic. In all doubtful cases purgatives should be completely withheld. The author found in experiments that cats and rabbits bore a simple invagination with remarkable freedom from symptoms, and that after a varying period of time the invaginated bowel could be excised and the animal would recover. All the animals, however, to which purgatives were administered after the intestines had been invaginated died when enterectomy was performed. Clinical evidence teaches the same lesson, for all the records of cases show that the symptoms have been seriously increased when the patient has been purged. The routine treatment of intussusception is to chloroform the patient, and steadily to fill his large intestine with hot salt solution under a hydrostatic pressure, of not more than three feet in a child, the fluid being allowed to remain in the intestine at least ten minutes. The earlier this method is adopted after the appearance of the symptoms the better are the results obtained, but it should not be adopted in enteric intussusception, in cases where the symptoms are very acute, or in those where the absence of signs or symptoms, with a subnormal temperature, leads the surgeon to suspect that the intestine is becoming gangrenous. In these cases, and when the intussusception is not reduced after irrigation has twice been tried, and when after reduction the intussusception has thrice occurred, the abdomen must be opened. The surgeon must then be prepared to deal effectually with the conditions he may find by such operative means as he can carry out with the least amount of shock and in the shortest space of time that is compatible with the safety of the patient. This will be ensured if he uses the method with which he is the most familiar. But he should bear in mind that hardly a case can arise in which he is justified in closing the abdominal wound without at least an attempt to complete the operation by reducing or removing the intussusception. Such half measures as the formation of an artificial anus are hardly ever

justifiable, and the results obtained by them are usually most disastrous. In the light of our present knowledge it appears that the use of a button or bobbin is most likely to give good results when enterectomy has to be done for an enteric intussusception, while Maunsell's operation is best adapted for the cure of ileo-cæcal and colo-colic forms of intussusception.

**Mann, J. P.: The Treatment of Club-foot.** (*The Medical and Surgical Reporter.* 1897. Vol. lxxvi., No. 6.)

The conclusions of this paper are based on private and public work done during the last ten years, during which period the author saw and treated over 500 cases of club-foot. The term club-foot is used to embrace all varieties of foot deformity. No adequate reason for limiting the term to the single variety of *talipes equino-varus* has thus far been presented.

The treatment of club-foot may be entirely mechanical, or both mechanical and operative. Prior to the commencement of the present century all remedial efforts were strictly mechanical. The results in the majority of cases was but a partial cure, obtained at great expense of time and patience to both patient and physician. It is common knowledge that, after many months of mechanical treatment by Sheldrake, Lord Byron became disgusted and abandoned further curative attempts.

With the introduction of tenotomy, mechanical appliances were almost entirely set aside in practice, and again partial cure became the rule. Quite recently, with the advent of clean surgery, and with the intelligent employment of both mechanical and operative measures for relief, the treatment of club-foot has reached a rational basis. To-day, when cases are seen sufficiently early, few surgical procedures are as exact in indication or as certain in result as the methods for rectifying club-foot.

The initial step, in correcting any congenital club-foot, is to adopt, at birth, the mechanical plan of treatment necessary to bring about either a complete, or, when this is impossible, a partial cure. If only a partial cure obtains, the appliances, while aiding to accomplish this, have entirely prevented increase of deformity, which without their use would have ensued; and also, the surgeon has thereby been enabled to await the arrival of the proper time for operative interference. Mechanical correction may be effected by the hands; by elastic and other bands;

by plaster of paris and other stiff materials; by various shoes, splints and steel mechanisms, or by leverage, called by some "forced" correction. The selection of a mechanical method of cure, in any case, is largely determined by parental intelligence, accessibility, and physical condition of the patient and by the degree and stubbornness of the deformity.

Some feet can be straightened by manual effort alone; others, during their course of treatment, will require, along with manipulation, suitable retentive apparatus. It is very important that the physician, after a careful study of the case, should decide for himself what apparatus is necessary to a cure. It is just as improper for the instrument-maker to determine the mechanical treatment of a case as it is for him to select and direct operative measures. Frequently the instrument-maker, for the time being a self-constituted physician, will prescribe, *e. g.*, for an active tuberculous arthritis a brace that affords free motion to the joint and a splendid opportunity for amputation at a little later period.

Many club-feet are not seen by the surgeon until the deformity is so fixed, so unyielding, that both mechanical and operative interference are requisite for a cure.

As to the time for operation, the author believes that no congenital club-foot should be operated on until the child has learned to walk, *i. e.*, usually from the twelfth to the twentieth month. With skilful manipulation, and, if necessary, retentive apparatus, many cures can be effected when the deformity is slight.

Some children with club-foot are not of robust build and may become victims to one or other of the maladies of infancy, and thus early operations may be rendered useless. Why add shock from operation and anæsthetic to the already too long gauntlet of children's enemies? Mechanical treatment, judiciously selected and applied, will never cause death. An operation, however skilfully performed, may be "the last straw" under which the little one sinks into an early grave.

When a child can walk, in addition to suitable apparatus, its body-weight very materially contributes to the retention of the foot in its correct position. A pressure of from fifteen to thirty pounds controlled by mechanisms, constantly acting while the patient stands erect, is without doubt a powerful corrective agent. Further, it must not be forgotten that many cases are assisted to a cure by properly directed muscular action. The



infant's foot is so small and the tissues are so tender that often with operations done too early—unless the surgeon can frequently see the part, and the parents are more painstaking and intelligent than usual—it is difficult to avoid partial or complete relapse.

As to the method of operating, the author cites numerous authorities with quite divergent views as to the best plan for dividing the soft tissues of the foot; there is general agreement among orthopedic surgeons against the removal of bone.

It is not asserted here that open tenotomies and operations such as Phelps', or any of the seven methods of tarsal excision, will not straighten club-foot; but it is believed that the section of the short tissues can be accomplished with less risk of sepsis, less mutilation of the foot, less pain to the patient, without any exposed cicatrices and with greatly decreased post-operative contraction; thus ensuring, if these claims be just, a stronger, more shapely and more useful foot than is obtained by open operations. The author asserts that he has experienced no difficulty from inability to identify structures beneath the skin, from failure of tendons to unite, or from loss of time. Nor has he seen a single case of sepsis in subcutaneous operations for club-foot. Any surgeon who neglects strict aseptic precautions is incompetent to operate on a club-foot or anything else. It is far more likely that sepsis will occur in a Phelps operation, in which a large wound is left open to granulate and the clot to organize, than that septic matter will enter the tissues through a minute opening in the skin which will close and practically heal in twenty-four hours.

Following operation, fixation of the foot in an over-corrected position should be maintained, for about six weeks, by means of plaster of paris bandages applied from the toes to just below the knee. The foot is thus moulded and forced into the required position, and the bones and soft structures all yield to the continuously acting pressure of the rigid dressing. The plaster of paris should be removed weekly in order to inspect the foot; for if this precaution be neglected, serious injury from pressure may take place. When changing the plaster dressings, if the correction has not been ample, opportunity is afforded for anæsthetizing the patient and using leverage for further correction of the deformity. This will be required in many severe deformities. Subsequent to treatment by "fixed" dressings a

retaining shoe and brace must be worn. In marked deformities of children, the shoe and brace are worn until the child is twelve years of age; ossification is then completed. In adults the time will vary with the degree of deformity. After discarding apparatus, both children and adults should be kept under observation, and, if there is any tendency to a relapse, the supports should be at once reapplied.

**Bacon, Gorman : The Treatment of Ear Diseases Resulting from Influenza.** (*New York Eye and Ear Infirmary Reports.* 1897.)

That there is a specific micro-organism of a particularly destructive character in the secretion found in the middle ear or mastoid cells, when acute purulent otitis media exists with or without accompanying disease of the mastoid cells, no one will deny who has seen many cases of ear disease which have occurred during the recent epidemics of influenza.

It is undoubtedly true that in many, if not all, cases of acute otitis media there is a simultaneous involvement of the mastoid cells.

In simple cases of acute otitis media, where the mastoid cells are congested, it is usual for the inflammation in the latter to subside readily under the use of the artificial leech and the application of the Leiter coil. On the other hand, in cases of mastoid disease due to the influenza, the preceding treatment is frequently of no avail, and we are compelled much more often in such cases to perforate the bone, than in the simple cases due to cold. This is especially the case in patients who have the so-called pneumatic mastoid process.

If we believe in the presence of a specific micro-organism, we can easily understand how readily it can travel from the middle ear to the mastoid cells and cause a rapid destruction of the bony parts. It is, therefore, of the highest importance in cases of acute otitis media occurring as a complication of the influenza, to make an early and free incision in the drumhead, rather than wait for spontaneous rupture, and to douche the ear frequently with a mild bichloride of mercury or other antiseptic solution. We should at the same time resort to artificial leeching of the mastoid and the application of the Leiter coil if the mastoid cells are involved. The author, however, attaches the greatest

importance to an early incision of the drumhead, in order to prevent, if possible, the implication of the mastoid cells.

That the pus is of a particularly destructive character in cases of acute otitis media occurring in typhus fever, diphtheria, scarlatina and tuberculosis, is a well-known fact.

In influenza-otitis the pain is usually very severe, the drumhead becomes rapidly engorged with blood, and when perforation occurs, the discharge, which is yellow and sticky at first, is apt to be tinged with blood; but later the secretion is generally profuse and muco-purulent.

When the mastoid cells are involved, persistent tenderness on pressure is usually observed at the middle or lower thirds of the mastoid process. This does not, however, indicate that the disease is limited to this portion of the bone, for we may find, when operating on such, that the disease is much more marked in the antrum than in the other portions.

The temperature may be considerably elevated in certain cases of acute otitis or mastoiditis resulting from the influenza. Frequently, however, when mastoid disease exists, the temperature is likely to be only slightly above normal, varying from  $99\frac{1}{2}^{\circ}$  to  $101^{\circ}$  F.

When we perforate the bone in acute cases and find the disease limited to the middle or lower thirds of the mastoid process, it is not necessary to remove healthy bone in the region of the antrum; but, on the other hand, if the cells in the upper portion are principally involved, we should establish a communication with the antrum and middle ear.

One of the principal indications for operating in mastoid disease is the presence of pain which remains in spite of the usual treatment, *i.e.*, leeching, Leiter coil, etc.

The pain may, however, only be complained of when firm pressure is made over the mastoid bone, usually the tip or middle third. If, added to this, there is a copious discharge from the middle ear, with a rise in temperature which persists, and a narrowing of the external meatus, with or without a bulging of the superior and upper wall of the canal, it is our duty to proceed to an immediate operation.

After further consideration of the subject the author reaches the following conclusions:

1. As the usual antiphlogistic treatment is less efficacious in cases of influenza-otitis than in simple uncomplicated cases, it is



of the highest importance that a free incision should be made in the drumhead at the commencement of the disease, followed by frequent douching of the ear with antiseptic solutions.

2. When the mastoid cells are involved and the disease has not yielded to treatment commonly adopted in such cases, it is advisable to perforate the mastoid at an early date, on account of the destructive nature of the secretion, which otherwise may lead to a rapid caries or necrosis.

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#### MEDICINE.

**Dudley, J. W.: Constitutional Effects of the Improper Feeding of Infants as Exemplified by Infantile Scorbutus.** (*Northwestern Lancel.* 1897. Vol. xvii., No. 5.)

In an extended and very scholarly paper presented before the Minnesota Academy of Medicine, the author reviews the subject of the artificial feeding of infants with especial reference to the constitutional effects of various proprietary and patent foods. He refers to the admirable work and persistent efforts of a half dozen American pediatric workers, which have brought the subject of artificial feeding to the most important place in the field of infant therapeutics. As a result of this work that subject has yearly assumed greater importance in the work of the practitioner.

But in the rush of scientists and capitalists to devise a universally applicable food for infants, the pendulum has swung so rapidly between what may be called ultra-empirical and ultra-theoretical methods, that at present there is scarcely a subject upon which the doctor is called to give advice in which there will be less uniformity of opinion and practice. Many of the foods evolved during the past decade have proved extremely valuable, meeting the digestive requirements and doubtless saving infantile life. But we have only recently learned that more is to be required of a food suitable for an infant than this. We have learned that there is a class of cases in infant pathology which begin insidiously, and which, to the eye of the mother, present no symptoms suggestive of a faulty food supply, so that, unless recognized by the medical attendant, the real cause is not likely to become apparent. The most typical of these affections, and the one most clearly dependent upon bad feeding, is scorbutus, including the condition sometimes called acute rickets. In this paper the author calls attention to the dangers of many of the

most common varieties of infant foods in view of our present knowledge of the prevalence and nature of infantile scurvy, and to enter a plea for the use of the more rational food, modified cow's milk, as opposed to the hopelessly unprogressive method of resorting to the empirical use of the numerous prepared foods.

There are several methods of modifying cow's milk so as to make it approach proportions of the various ingredients found in human milk. In the principle involved these methods are all the same, *viz.*: dilution, in order to bring the albuminoids from 4 per cent., the amount present in mixed cow's milk, down to  $1\frac{1}{2}$  or 2 per cent., the amount present in ordinary human milk, followed by an addition of enough cream of known richness in fat to raise the fat in the diluted mixture to about  $3\frac{1}{2}$  per cent., which is nearly the same amount as existed in the cow's milk before diluting the albuminoids. A definite amount of milk sugar is then to be added in order to bring the proportion of sugar back to the proportion existing before dilution. To this mixture is usually added a definite amount of lime water or bicarbonate of soda to render the mixture faintly alkaline. Such a food is not identical with human milk, but it is the nearest approach to human milk which is practicable with our present knowledge.

In condemning modified cow's milk as not agreeing with many children, one should bear in mind the fact repeatedly insisted upon by Dr. Rotch, that modified milk is not any particular combination. The quantities of albuminoids, fat and sugar, are susceptible to an almost infinite number of modifications, and if the ordinary proportions disagree, the argument is not against modified milk, but against that particular proportion of ingredients which has failed.

Milk thus modified for infant feeding has obtained great popularity in those communities where it is most used. The criticism which in some quarters has been made on the compounding of milk on the basis of a careful consideration of the need of the individual infant in respect to albuminoids, fat and sugar, are fully met by the success which the method has obtained when persistently and intelligently carried out, and the fact that it involves a little more exactness of thinking than the empirical use of proprietary foods, is certainly not a good reason for comfortably setting the method aside among those things which are good in theory but impracticable.

In view of the entire absence in the literature of scurvy of any cases, so far as the author has been able to discover, fed on properly modified cow's milk, raw or Pasteurized, and of the almost certain cure of all cases when put on such a diet, we may safely conclude that scurvy will not occur when this diet is used. In reply to a personal question on this point, addressed to five of the best known authorities in this country, the invariable testimony was that no case of scurvy has occurred when properly modified raw or Pasteurized milk is used.

Whether scurvy is caused by milk sterilized at  $212^{\circ}$  is a debated question and one of great practical importance. Rotch says, "in my experience, there is no evidence that sterilized milk is the cause of scurvy," and Winters has reported several cases of recovery by changing to milk sterilized at  $212^{\circ}$  for twenty minutes only. On the other hand, the danger of scurvy from complete sterilization has been insisted upon by many competent observers, and is set down as an occasional cause by nearly all, including Northrup, Holt, Townsend and others. Starr reported five cases on milk properly modified and sterilized, all of which recovered on the same diet unsterilized and with the addition of beef juice and orange juice. The accumulated evidence indicates that sterilization at  $212^{\circ}$  does occasionally, though probably rarely, induce scurvy. As the germs of all common diseases are destroyed by a temperature of  $160^{\circ}$  F. or less for twenty minutes, and as this temperature is not sufficient to destroy the antiscorbutic property of milk, we may conclude that a higher temperature than this is useless as a means of preventing infection and exposes the child to a risk of contracting scurvy. One of the simplest and most efficient appliances for this purpose, the author believes is that devised by Dr. Freeman, of New York, and described in full in the ARCHIVES OF PEDIATRICS of August, 1895.

The points which the author particularly emphasizes are the following: Infantile scurvy is not a rare disease and it is increasing in frequency; it is a disease depending upon improper food; condensed milk and proprietary foods, even when diluted with cow's milk and unsterilized, have been the food upon which the disease has developed in the vast majority of the reported cases; in modified Pasteurized cow's milk we have a food which is absolutely nonscorbutic; this food can be made to agree with, practically, all infants; the dangers of scurvy are too real to warrant the use of any other food except as a temporary expedient.



**Bogart, Arthur H. : Infantile Scorbutus ; a Report of Two Cases.** (*Brooklyn Medical Journal.* 1897. Vol. xl., No. 5.)

CASE I.—M. K., aged nine months. Female.

Patient was admitted on May 29, 1896, with the following history: Baby had been fed on one of the prepared foods since birth, and up to two weeks previous had always enjoyed good health, growth and development being normal. The mother, then, first noticed that the baby cried whenever her left leg was handled; that she did not move the limb as she did the other, and also, that she usually lay with it slightly flexed at the knee.

Upon examination the patient was found to be fairly well nourished, somewhat anemic, and with a very irritable disposition. The mouth was practically normal, and there were no ecchymotic spots on the skin. The right leg was flexed to an angle of about twenty degrees; was extremely painful upon manipulation, and presented a marked fusiform swelling, involving the lower and posterior half of the limb; the swelling was boggy to the feel, quite tender upon manipulation, and the skin was slightly reddened. Treatment: The food was changed to cow's milk and barley water, scraped beef and orange juice.

On June 6th the baby had improved very much, the leg could be handled with very little pain, the swelling had markedly diminished, and the tenderness was practically gone.

On June 12th the patient was apparently quite well, the swelling had entirely subsided, the limbs could be moved in any direction without causing pain and there was no redness or tenderness upon manipulation.

CASE II.—A. S., aged nine months. Female. Admitted January 15, 1896.

During the summer the patient suffered from diarrhœa, but made a good recovery and remained well up to five weeks previous to admission. She had been fed on condensed milk and had not been well cared for, her mother having been in an hospital. Five weeks ago it was noticed that the baby cried more than usual when her legs were handled; also, that they were somewhat swollen.

Examination revealed marked fusiform swellings of both legs; most marked, however, on the left side. They were extremely painful on manipulation and tender to the touch; the skin was slightly reddened and the knees were flexed to an angle of about twenty degrees. They could not be straightened without causing great pain. The mouth was normal in appearance, and there were no ecchymotic spots on the skin. This case was referred to the hospital, where the diagnosis was confirmed, but, unfortunately, was not allowed to remain, the mother taking her away because of the diet she was receiving.

# ARCHIVES OF PEDIATRICS.

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[No. 10.]

## Original Communications.

### DIPHTHERIA OF THE EYE.\*

BY T. M. ROTCH, M.D.,

Professor of Diseases of Children, Harvard University, Boston.

Antitoxin has been given in such a large number of cases that there is little new which can now be presented concerning its use clinically. In the rarer and more fatal cases of poisoning by the Klebs-Lœffler bacillus, however, there is still much to be learned and much to be experimented with. The cases which I refer to are diphtheria of the eye and localized diphtheria of the larynx in children under two years of age. It is well-known that diphtheritic conjunctivitis is one of the most destructive of the acute conjunctival diseases, and that until antitoxin was used in the treatment of this class of cases, the loss of sight, and even of life, was of common occurrence.

The course and treatment of the following unusually severe case of diphtheritic conjunctivitis should, therefore, be put on record.

A boy, three years of age, was noticed on September 21, 1896, to have reddened conjunctivæ. There was considerable lachrymation and a slight congestion of the buba conjunctiva of each eye. The palpebral conjunctiva of both lids of each eye was reddened, swollen, and of a soft, velvety texture. There was little, if any, pus.

At the end of twenty-four hours the condition was much the same, but on the evening of the 24th the velvety texture had smoothed over somewhat, and Dr. Standish, who was taking care of the boy, began to suspect what the condition might be. Dr. Standish's description of the case is as follows:

On the following morning there was a distinct membrane on the conjunctivæ of the upper lid of each eye, and the swelling of

\* Read before the American Pediatric Society, Washington, May 6, 1897.

the lids was so great that they projected nearly half an inch over the lower lids upon the cheeks. At the end of that day smears taken from the conjunctivæ gave an abundant and pure culture of the Klebs-Löffler bacillus. The culture tubes were inoculated for further study, and, after twenty-four hours in the thermostat, gave a typical growth of the Klebs-Löffler bacillus.

At 4 P.M. on this afternoon, Dr. J. L. Morse injected 5 c.c. of the city of Boston antitoxin (of which a full adult dose is 5 c.c.) At 7 P.M. the membranes on the conjunctivæ were shredding off, and the thick, brawny lids seemed slightly more flexible.

On the following morning, the 26th, there was no membrane on the conjunctiva of the right eye, and all shredded nearly off from the left except a small patch upon the centre of the upper lid. By 12 M. the condition had changed markedly. The lids were again stiff and board-like. The conjunctivæ were thick, with a fine and heavy infiltration over the tarsal surfaces, and the thick membrane had reappeared over large areas. There was also a patch of membrane 3 mm. in diameter on the buba conjunctiva at the sclero-corneal margin of the left eye. At 10 A.M. 5 c.c. of antitoxin were given. By 3 P.M. in the afternoon the condition of the lids was again greatly improved. They were soft and almost flexible. The membrane was only hanging by shreds to the conjunctiva, and the condition was practically the same as that of the night before. This improvement continued throughout the night, but by 12 M. on the next day the stiffness had returned to the lids, and a thick bluish membrane covered both upper lids and ran back behind the retro-tarsal fold for the first time. The patch of membrane, which had returned at the sclero-corneal margin and the epithelium, had peeled off the cornea over an area of 3 or 4 mm. in diameter. The following morning the margin of the area, where the epithelium was denuded, became distinctly infiltrated, and the whole denuded surface of the cornea was opaque.

It then became apparent that the antitoxin in this case exerted an immediate and favorable effect upon the progress of the disease, and that this effect was well marked in four or five hours after the antitoxin had been injected, but that at the end of twenty-four hours there had been, in each instance, a recrudescence of the pathological process. It, therefore, was evidently necessary to repeat the injections at least once in sixteen hours. This was accordingly done, and  $2\frac{1}{2}$  c.c. of antitoxin were injected every



sixteen hours, from the 27th of September until the 30th, in all, eight injections. From the time when this treatment was instituted, the eyes progressively recovered, the membrane shredded off, and the brawny infiltration no longer returned. The epithelium was replaced on the cornea and the last of the membrane sloughed out of the conjunctiva of the upper lid at about 5 P.M. on the afternoon of September 30th, leaving a well defined ulcer. The eyes made a rapid recovery.

On October 4th a profuse urticaria appeared, which lasted forty-eight hours. As this subsided there was a sudden rise of temperature with considerable loss of strength and drowsiness. This continued for some days, after which the child made a rapid convalescence.

At the time when the temperature rose, there was an acute streptococcus infection of the throat, accompanied with enlarged cervical glands. The urine, at this time, was lessened in quantity and contained a large amount of earthy phosphates, but there was no albumin.

The form of this diphtheritic conjunctivitis was, according to Dr. Standish, exceptionally severe.

In addition to the antitoxin the local treatment consisted of cold applications to the lids and an ointment of red iodide, to which was added  $\frac{1}{2}$  per cent. of pilocarpine.

From Dr. Standish's experience in this case, as well as others which have been under his care, it is very evident that antitoxin exerts a prompt and beneficial effect, not only upon the pathological process in the conjunctiva, but also upon the corneal margin.

Dr. Standish's conclusions from his cases are:

First, that in all cases of purulent conjunctivitis the diagnosis should depend upon the bacteriological examination and not upon the clinical appearances.

Second, that diphtheritic conjunctivitis may be present in localized areas without the conjunctivæ being affected as a whole.

Third, that ulcers of the cornea, with rapid necrosis of the corneal tissue, may be due to infection with the Klebs-Lœffler bacillus.

Fourth, that antitoxin affects favorably both the conjunctival disease and the corneal necrosis.

Fifth, that an early bacteriological diagnosis is exceedingly



important, as the cornea is generally safe, with a resulting preservation of vision, if antitoxin is used early.

While the diphtheritic process was going on in the eye, the temperature was not especially raised, and, as may be seen by the chart, was not especially high until the streptococcus invasion of the throat.

In analyzing this case the question at once arose as to whether the infection of the throat, after the recovery of the diphtheritic process in the eye, was due to the Klebs-Löffler bacillus, especially as the glandular enlargement was marked. Careful cultures, however, failed to show the presence of anything but a streptococcus invasion.

The question also arose as to the part which the unusually large injections of antitoxin played in the marked symptoms which arose at this period of the disease. The presence of the profuse urticaria seemed to show that the antitoxin had produced a poisonous effect upon the child, and no doubt arose in my mind but that it was well first, to have poisoned the child with antitoxin and thus preserve its eyes, and second, that the poisoning by antitoxin was not in itself serious, and certainly would encourage me, under the same circumstances, to repeat the drug in the same doses.

In my experience localized diphtheria of the larynx is so fatal in the first two years of life that the following case, seen in consultation with Dr. Howe and Dr. Morse, is of great interest with reference to the treatment of this class of cases with antitoxin.

A boy, eighteen months old, began to cough on the 19th of April. There had been no other sickness in the family excepting that a brother had a simple cold for some days. A culture in this case had been negative. There had been no diphtheria in the place where the child lived, although in the neighboring towns there had been a number of cases. The cough grew worse and the voice became hoarse. On the night of the 21st, and during the next morning, there were several attacks of laryngeal dyspnœa.

During the afternoon of the 22d when the child was examined by Dr. Morse it was found to be quiet and to be breathing easily. The throat was much injected, but no membrane was discovered. The heart and lungs were normal. In spite of the absence of the membrane, by my advice, antitoxin 1000 units was given by Dr. Morse at 5 P.M., on the ground that it was better



to give an unnecessary dose of antitoxin than to lose time in case the case proved to be diphtheria. Two or three hours later the respiration became so labored, and the child so restless that it was intubated by Dr. Morse at 9 P.M. After intubation the child breathed more easily and had a comfortable night.

On April 23d at 8 A.M., the respirations were found to vary from 40 to 50, the pulse to be 160, and the temperature 101° F. The tube was removed at 8.30 A.M. without difficulty, and the child took eight ounces of milk. At 9 A.M. there was so much obstruction that the tube had to be reintroduced. A culture taken from the throat proved to be negative. The swelling of the epiglottis and arytenoids had increased and antitoxin 500 units was given at 2 P.M. The antitoxin was continued on the ground that as the child showed the clinical symptoms of diphtheria, and as it is well-known that one negative culture is not sufficient to determine the absence of diphtheria, it should be treated as diphtheria, and because antitoxin must be given at once in severe laryngeal cases if we wish to preserve life.

At 3 P.M. the respirations were from 40 to 50, the pulse was 160, and the child had lost in weight. It took one to two ounces of milk every two hours, and twenty drops of brandy. It was also treated with steam. On examining the lungs I found that there was resonance on percussion everywhere, but that both lungs were filled with moist râles of all sizes. I advised that the antitoxin should be given at least every eight hours, stating that in my opinion, if the child's life was saved, it could only be from the favorable action of the antitoxin; 500 units of antitoxin were given at 8 P.M. The child had a poor night, was very restless and very weak, and on April 24th at 2 A.M., 1000 units of antitoxin were given. Strychnia ( $\frac{1}{200}$ th grain) was given at intervals and brandy for its physiological effect; 1000 units of antitoxin were again given at 9 A.M. and 500 units at 4 P.M.

On April 25th the child had taken somewhat more nourishment during the night, but was very nervous and the heart was weak. Morphia ( $\frac{1}{100}$ th grain) was given at 2 A.M. and 500 units antitoxin at 1 A.M. The temperature was 104° F.; pulse, 160; respiration, 50. As the child was breathing somewhat more quietly the tube was removed at 9.30 A.M., but at 9.45 dyspnoea returned and the tube was replaced. A second culture showed the presence of the Klebs-Löffler bacilli. At 8.30 P.M. the tube

was again removed. The child went to sleep and was quiet for twenty minutes and then became so choked up that the tube had to be put in again. The obstruction at this time was evidently due to œdema.

On April 26th 500 units were given at 3 A.M. The child gained decidedly during the day, and by evening the temperature had fallen to 101.8° F., and the respiration to 36. The child took its nourishment fairly well. It had a quiet night and on the morning of April 27th the respirations were 36, and the temperature and pulse were falling. Examination by Dr. Morse showed a suspicion of consolidation of the lung in the right lower back. The profuse moist râles which I had found had almost entirely disappeared.

On April 28th the tube was removed at 8.15 A.M., but the dyspnœa immediately returned and the tube was replaced.

On April 30th the child was found to have continually improved, and the lungs showed no signs of consolidation and were apparently in an almost normal condition. The temperature was 99.5° F., the pulse 130, and the respirations 30. The tube was removed at 8.20 A.M., and the child breathed easily until 9 A.M., when it began to have laryngeal dyspnœa, apparently caused largely by spasm, and the tube was replaced at 9.20 A.M.

As it seemed important to get out the tube as soon as possible, and as the obstruction seemed due rather to spasm than œdema, it was removed at short intervals, namely May 1st, 2d, 4th, 6th, 7th, 8th, and 11th. It could be kept out as a rule but fifteen to thirty minutes and then had to be put back on account of spasm. On the 6th it was kept out two hours under the use of ipecac but as the result the child was much exhausted. At the last two trials it was rather difficult to account for the obstruction, as there was no œdema and the child did not seem frightened enough to cause much spasm. Paralysis seemed the probable explanation, especially as the heart had shown symptoms of weakness. The child was then put on strychnia, in addition to iron, which it was already taking. The tube was finally removed on May 17th, twenty-five and a half days after its insertion. The breathing was moderately labored and noisy—as if one of the aural chords was loose—for about two hours and then became easier. The improvement in respiration was progressive from

this time, except for occasional attacks of dyspnoea due to spasm from fright, and was not entirely normal, however, for several days.\*

67 COMMONWEALTH AVENUE.

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## DISCUSSION.

DR. MYLES STANDISH.—This is a subject in which I am strongly interested. Diphtheritic conjunctivitis has been described, as seen in Germany, as a disease of great severity. We have all seen these cases with swollen, infiltrated lids, with slight, purulent discharge, followed by great infiltration of the conjunctiva of the globe and necrosis of the cornea and the consequent loss of sight, a clinical picture which we called diphtheritic conjunctivitis. It has been one of those cases in which if the man died it was one thing, but if he got well it was another. If everything went to pieces it was diphtheria, and if it did not we then doubted our diagnosis. That feeling was so strongly marked that two years ago in the New England Ophthalmological Society a gentleman, very distinguished in our section of the country, reported a case at great length, but said nothing about treatment. When he got through I asked him, "What did you do for treatment?" "Well," he said, "as in these cases the eyes are always lost I do not think the treatment is of much interest." That was the position of ophthalmology a few years ago. About two years ago, in the Massachusetts Charitable Eye and Ear Infirmary, a bacteriological laboratory was opened, and we began to take cultures from purulent conjunctival cases. It soon became apparent to us that we were often dealing with diphtheritic conjunctivitis in cases in which we did not have the clinical picture just described. I had five cases of diphtheritic conjunctivitis last year. Of these, three died—and that is a very severe blow to an ophthalmologist, to have his patient die—and the other two lost their eyes. It seemed to me, upon reviewing my cases at the end of the year, that the treatment was highly unsatisfactory. Soon after I began to read in the journals reports of single cases of diphtheritic conjunctivitis treated by antitoxin, with good results. Then came this case, which Dr. Rotch has reported. This child had a diphtheritic conjunctivitis of the most pronounced kind of the old-fashioned type. Smears from the conjunctiva showed abundant Klebs-Löffler bacilli, as did also the cultures in the tubes. The diphtheritic patch on the conjunctiva was the primary cause of the loss of the corneal epithelium. The loss of the epithelium was the cause of the infection of the corneal

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\* Dr. Rotch also reported a case of acute colitis in a child two years and eleven months old and showed a colored plate of the lesion.



structure, yet it got rapidly well. Now no man in Boston has said that he has seen a case of infection of the cornea clear up before the membranes were off the lids and leave no scar in the cornea, until this case. After using antitoxin three times, as Dr. Rotch has reported, and the case had relapsed each time, at the end of twenty hours I proposed to put in the antitoxin every sixteen hours, and I think I rather horrified my colleagues. There were several gentlemen seeing the case with me, and they threw the responsibility on me. Dr. Morse, who was giving the antitoxin, said he had given the antitoxin in large amounts in the presence of profound general diphtheria. To give it in large amounts when the child was apparently well, except for a little discharge from the eye, was more than he wished to assume responsibility for. However, we went ahead. The result was that the child recovered. Nobody could possibly have expected this result without the use of antitoxin. Now this case is not alone. I have had two or three cases of ulceration of the cornea in which the infiltration of the conjunctiva of the lids was not a marked symptom, but in which there were similar patches of diphtheritic infiltration on the margins of the cornea, accompanied by very virulent, rapidly progressing necrotic ulcerations of the cornea, and these cases have gone on from bad to worse in spite of local treatment, so that in twenty-four to thirty-six hours from completing our diagnosis, the cornea was apparently about to be lost. Yet upon the use of antitoxin the process has stopped completely, the cornea has cleared up in a remarkable manner leaving comparatively little cicatrix, and the eyes have been saved.

Now, I firmly believe that a large number of the cases where eyes have been lost in the past from ulceration of the cornea we have had to do with a diphtheria and did not know it, but if we had known it and had not used antitoxin we should have lost the eyes all the same.

I for one feel sure that this case and the other cases of which I have spoken, have been saved simply and solely because we used antitoxin.

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**Intubation of the Larynx.**—Martin (*Gazette Médicale de Strasbourg*, February 1, 1896) concludes his article as follows: (1) The use of anti-diphtheritic serum has diminished the number of operations. From 1887 to 1894, 36 patients in every 100 with diphtheria were operated upon. In the last six months, since serum has been used, there have been 14 operations in every 100 cases; (2) From 1887 to 1894, the mortality of cases of operation was 77 per cent. In the last six months 23.5 per cent. In those operated upon there were three tracheotomies and one death, and sixty-four intubations with eight deaths, or 13.5 per cent. of deaths in intubation where serum was used. The writer thinks this speaks well for the serum treatment.—*Univ. Med. Journal.*

## A BRIEF ANALYSIS OF ONE HUNDRED CASES OF FRANK PNEUMONIA.\*

BY F. GORDON MORRILL, M.D.,

Visiting Physician, Children's Hospital, Boston.

The term "frank pneumonia" would seem decidedly preferable to "fibrinous" or "lobar" pneumonia in defining a disease of the lungs which (in children), tends to complete recovery in a vast majority of uncomplicated cases after the second year of life has passed. A mixed broncho-pneumonia may be "lobar" so far as its extent is concerned, and its exudate sufficiently "fibrinous" to mislead good pathologists unless recourse is had to the microscope to prove that the real nature of a given case is quite different from that of the affection which I am about to speak of.

The records of the Boston Children's Hospital are sufficiently complete to enable me to describe essential points of the mode of onset, course, and termination of one hundred cases, varying in age from fourteen months to eleven years. As to contagion, I came across a dozen instances in which the fact is noted that other members of the patients' families were sick with pneumonia, shortly before or at the time of the child's admission to the house.

Among the initial symptoms, vomiting and headache were the most frequent—the former in 70 per cent. and the latter in about 50 per cent. Pain in the side (occasionally referred to the epigastrium or belly), was present in not quite one-half of the children who were old enough to describe their symptoms. An initial chill has been seen, and noted only four or five times. As to the location of the disease, signs of solidification were detected in the right middle or lower back in 40 per cent. In such cases the lower border of the upper lobe was involved in perhaps 20 per cent. The pneumonia involved the left lower (with perhaps the lower portion of the upper) lobes, in 25 per cent.; the right upper lobe only, in 10 per cent.; left upper lobe, in 8 per cent.; right apex, 5 per cent.; left apex, 4 per cent. Both lungs, in 5 per cent. Râles only were detected in 2 per cent.,

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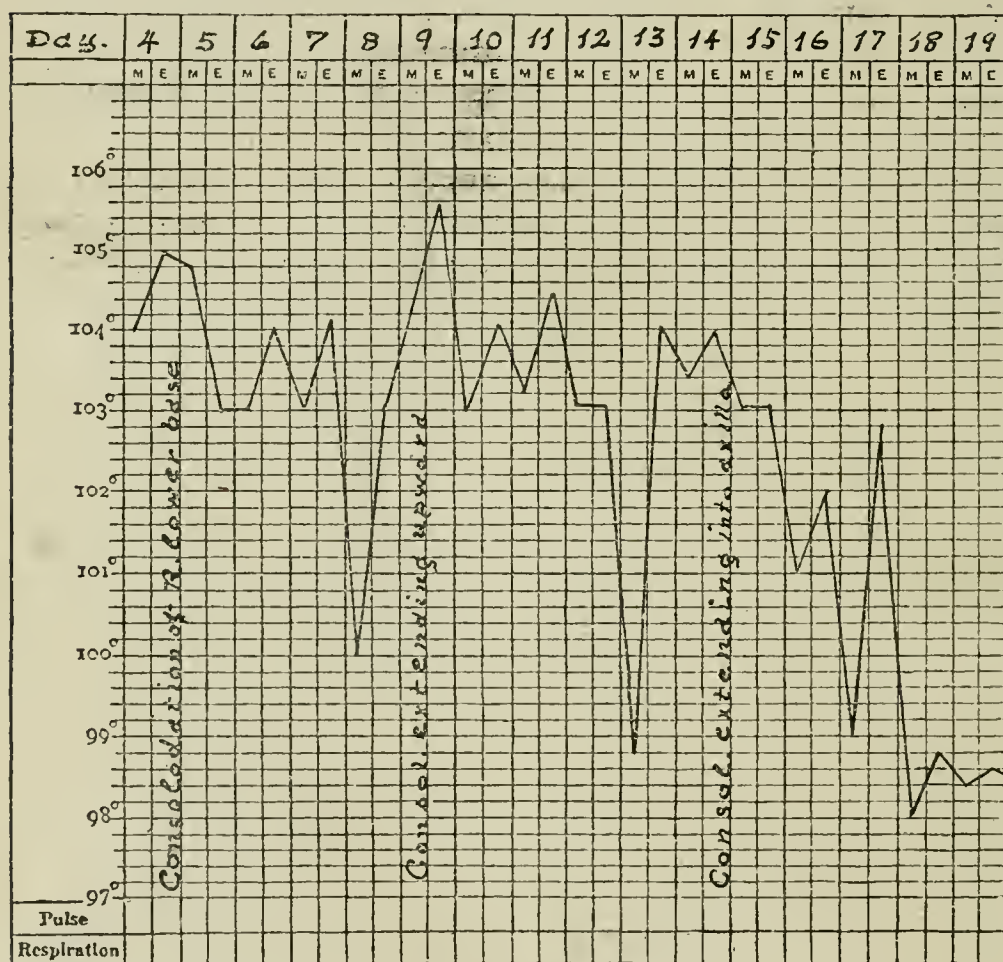
\* Read before the American Pediatric Society, Washington, May 5, 1897.

and in one case the history, course, and abrupt favorable determination of which left but little room for doubt as to the correctness of the diagnosis, no physical signs could be detected at any time, although examinations of the chest were frequently and carefully made. In 15 per cent. (not including apex cases), signs were easily obtainable over the front of the chest, and in one or two instances they were practically confined to that portion. In one case only was there an extensive pleuritic effusion. In two instances an empyema came on while the patients were under observation. The temperature registered 106° F. in five cases, the highest recorded being 106.2° F., in a case which ended fatally. Morning remissions of 1°—1.5° F. have been quite common, but decidedly irregular. Of seventy-eight instances the temperature dropped to normal or below during a single night in thirty-five, and during daylight in six—typical examples of crisis, occupying from four to fourteen hours in transit. This sudden loss of heat was hardly ever attended by any noteworthy symptoms. Profuse sweating and restlessness were recorded in two instances, but nothing approaching the grave signs of collapse which are liable to occur at such times. Prolonged crisis, occupying from twenty-four to forty-eight hours, was noted in eleven cases, and lysis (by which is meant that the temperature occupied from two days to two weeks in reaching normal), in twenty-six; exactly  $33\frac{1}{3}$  per cent. Of eighty instances the longest period of time elapsing between the first appearance of initial symptoms and the commencement of defervescence was fifteen days. It is not worth while to show many temperature charts of a disease so perfectly familiar to you all, so I will merely offer two for your inspection. One shows the effect upon the temperature of two intercurrent reinfections, or reinforcements of the original infection; and the other is that of a reinfection involving the opposite lung, five days after a normal temperature had been recorded.

In sixty-five cases the liberal policy of the hospital has enabled me to fix the average time occupied by the lungs in entirely clearing up after a normal temperature had been attained as nine days. In obtaining this result I have omitted from my calculations one case in which absorption was delayed for sixty-three days, and included one in which this process occupied twenty-four days. The difference in this respect between cases ending in lysis and those terminating by crisis was one day in



favor of the latter. In other words, the lysis cases showed physical signs as much later than the crisis cases as the temperature occupied in reaching normal, plus one day. The mortality has been exceptionally large—six deaths in one hundred and twenty-three cases—nearly 5 per cent. In one of these cases, which I distinctly remember, the patient, an infant, died of an extensive consolidation in a very few days; and as I look back and recall the high degree of dyspnœa and cyanosis present, I

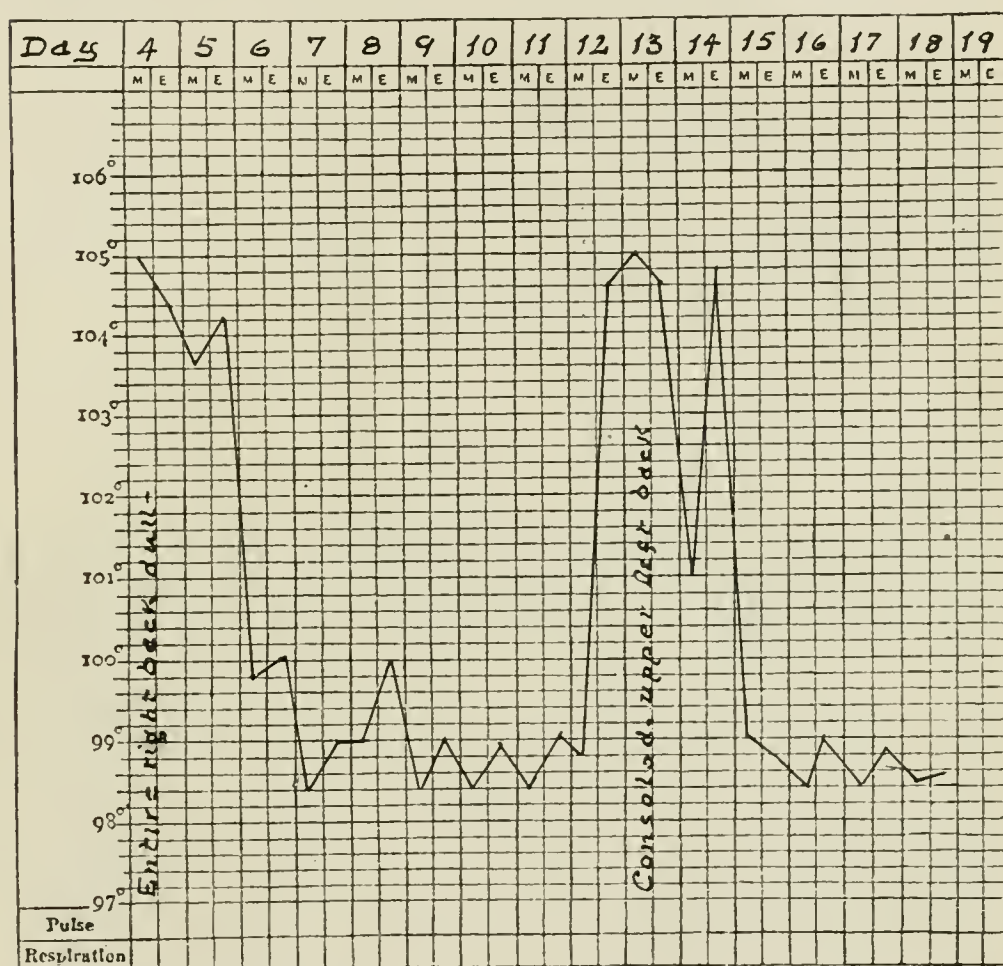


TEMPERATURE RANGE IN FRANK PNEUMONIA OCCURRING IN A CHILD OF TWO YEARS.

am inclined to think (in the absence of an autopsy), that the case may have been one of pseudo-lobar or mixed pneumonia. Another fatal case was one of typical so-called "cerebral" pneumonia with vomiting, delirium, tremor of the extremities, and marked retraction of the head with rigidity of the cervical muscles. Nothing was detected in the lungs until the third day, when a solidification of the lower right lobe was found. Twenty-four hours later the child died, with a temperature of

106.2° F. The cerebral symptoms ceased when the pneumonia developed. The other four fatal cases were autopsied, and I will give rough outlines of the lesions they presented, as they illustrate very well the fact that the infection must, as a rule, involve other than pulmonary tissue before causing death.

M. H., a boy, aged eleven years, of miserable aspect and with many enlarged glands in the axillæ and groins, walked into the hospital June 13, 1893, with a temperature of 104.6° F. He



cardium contained sero-purulent fluid. Visceral and parietal layers covered with a fairly thick layer of fibrin. Right pleural cavity contained a small amount of sero-purulent fluid. Left lower lobe contained a small area of consolidation surrounded by a zone of pus. Talamon-Frankel pneumococcus in the pericardium, pleura, spleen and liver.

M. L., a girl aged seven years. Dirty yellow pus in bronchi. Right lower lobe solid and bound everywhere by fibrinous adhesions. Right upper lobe congested. Evidence of old empyema on right side. Spleen soft, flabby, and swollen. Friedlander's micrococcus lanceolatus, the only micro-organism discovered on culture.

T. S., a boy, aged two years. Hepatization of entire left lower lobe. Entire left lung covered with a thick fibrinous pleurisy. Right lower lobe the same, and also a portion of right upper lobe. Mediastinal tissues and thymus gland infiltrated by the fibrinous exudate. Coverslips from the lungs and pleura contained many Talamon-Frankel pneumococci, as did cultures from the kidney, liver and spleen.

As regards treatment, the usual course pursued has been as follows: Constipation is first treated by small hourly doses of calomel, and subsequently by glycerine enemata. A great majority of the cases have had brandy, and, perhaps, one-half have taken digitalis or strophanthus. The amounts given have been increased if the symptoms become aggravated. No external applications are now used. Occasionally a little opium has been exhibited to ease severe pain in the side, and hypodermic injections of strychnia in a very few instances when the heart shows marked signs of weakness. Examinations of the chest are made in a manner least disturbing to the patient. The cold pack ( $65^{\circ}$ - $75^{\circ}$ ), or bath, reduces the temperature (in our very moderate experience) to a greater extent and for a longer time in frank pneumonia than in typhoid fever. The baths have been very extensively employed in Paris during the past year, but while considered a sheet anchor in acute broncho-pneumonia chiefly due to streptococcus infection, they have proved a failure in that form of the disease of which I am speaking. Perhaps some day a serum treatment will be discovered which will prove successful in cases where the pneumococcus infection does not confine its work to pulmonary tissue, but affects the pleuræ, pericardium, brain, and other organs, under which circumstances the disease may prove fatal in spite of its "benign" reputation.



The points to which I would call your attention are as follows:

1. To the confusion to which the term "lobar" pneumonia is liable to give rise. For example, Goodhart states that of one hundred and twenty of his cases of "lobar" pneumonia twenty-five proved fatal. Surely this cannot be set forth as an average result of acute frank pneumonia of childhood as observed in America, or elsewhere; and the natural inference is that a name which is based only upon the extent of lung involved, cannot fail to distort the statistics of mortality.

2. The large percentage of these cases which terminated in lysis—one-third—which certainly far exceeds the number which I anticipated before going over the records.

3. That so far as a single instance goes to prove, Friedlander's micrococcus lanceolatus can cause frank pneumonia—this being the only micro-organism discovered in one of our fatal cases.

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**Sero-therapy in Meningitis.**—Righi (*Rif. Med.*) reports the case of a healthy child, aged seven, who suffered from cerebro-spinal meningitis, from which disease his sister had recovered some two or three weeks previously. The illness began with headache and pains all over, fever, shivering, and vomiting. On the second day there was considerable rigidity of the neck and the headache was worse. Examination of the blood at this date showed the presence of diplococci (Fränkel's). Strabismus, intermittent delirium, naso-labial herpes, and facial paralysis occurred on the next two or three days, and on the fifth day the child was half unconscious. On the sixth day blood was taken from the arm of the patient's sister—who had meningitis—and 5 ccm. of the colorless, limpid serum injected into the patient. There was no reaction at the point of injection. Five hours afterwards the temperature was lower, the respiration better, and the child had willingly taken nourishment. Ten hours afterwards he sat up in bed and could move his head without pain. Three days after the injection the child was able to get up a little morning and evening, and could walk. There was a slight return of symptoms on the seventh and ninth days, but otherwise recovery was uninterrupted, and after fifteen days there had been no return of the symptoms. Very slight strabismus and facial paralysis may still be detected. There was no albuminuria.—*British Medical Journal*.

A FATAL DISEASE OF INFANCY WITH PARESIS OR PARALYSIS, ACCOMPANIED BY IDIOCY OR IMBECILITY AND PROGRESSIVE BLINDNESS; WITH SYMMETRICAL CHANGES IN THE MACULA LUTEA (TAY, KINGDON), WITH REPORT OF TWO CASES. (AMAUROTIC FAMILY IDIOCY OF SACHS.)

BY HENRY KOPLIK, M.D.,

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The history of the disease which is the subject of this paper, dates from an accidental discovery of certain characteristics in the fundus of the eye by Warren Tay, in 1881. Though a disease of infancy and childhood, affecting the cerebro-spinal system, most of the cases hitherto published have occurred in the practice of eye surgeons, for reasons which will be readily understood. There is no mention of this disease in pediatric literature, though, as stated, it is one of the most interesting conditions to be met in infancy. Many cases must have passed through the hands of physicians as marasmus or idiocy. As will appear it is strictly neither. It is a distinct characteristic disease, and though the eye lesion is pathognomonic, we can readily recognize the cases, once having seen an example of the disease before the ophthalmic examination is made.

Following closely upon the publication of Tay, we have had cases of this fatal disease recorded by Magnus, Goldzieher, Hirschberg, Kingdon abroad, and in this country by Sachs, Knapp, Carter and Koller, Heiman (Sachs).

The general characteristics of the disease may be briefly stated as follows:

The infants as a rule are born in apparent health, and remain so up to the third or the fifth month of life; at this time, the infant will be noticed to appear stupid. It will not notice things as other infants. It does not hold its head up, and after a time it is noticed that it is unable to sit up. The muscles of the back are weak. This weakness of muscle increases so as to amount to a paralysis or paresis, with or without spastic phenomena. There is an absence of pain or peevishness; there is a listless vacuity about the expression of the face of the infant, and it is noticed that though at first the sight may be good, blindness of a more or less pronounced type gradually ensues. The infant

lies helpless in arms or in its cradle, muscles relaxed, and in some cases a little irritation will cause a rigidity, temporary, it is true, of the muscles. There is relaxation of abdominal muscles, and, as a rule, constipation. Reflexes are increased as a rule, sometimes absent. The disease is progressive, and most of the cases thus far published have proven fatal at the end of a year to six years. The disease seems to run in certain families, and in some of the families no less than four cases have been recorded. Before further describing this disease, I will relate two cases occurring in my own experience:

CASE I.—Infant, male, eleven months old; weighs fifteen and one-half pounds. Mother is a nervous woman, and is a Russian; she has had five children; all well. This is the young-

PLATE I.

PLATE II.



PLATES I-II. SHOWS ABSOLUTELY RELAXED STATE OF ALL MUSCLES, INABILITY TO HOLD HEAD UP, VACANT EXPRESSION OF EYES AND FACE IN CASE I.

est; it was always a weakly infant brought up on the bottle; five months ago the infant sustained a fall, having been dropped by a brother; since then it has grown weaker.

*Status præsens.*—As long as the writer has known the infant (six months) he has been a very apathetic, weakly infant. He lies in his mother's arms, scarcely moving. Does not play or smile or attempt to sit up. Eyes have a vacant stare; muscles of the arms and legs are flabby; hands lie clenched, for the most part; when the lower extremities are irritated by handling or lying on



a surface, there is a slight spastic contracture. The pupils of the eye alternately contract and dilate, and the head rolls from side to side without any apparent intent. No teeth; head has a rachitic conformity, as also the chest and wrists.

April 5th, had a pneumonia in the left lung, and recovered; bronchitis left.

Eyes were examined by Dr. Wm. Cowan, ophthalmologist to the Good Samaritan Dispensary, who reports that there is a symmetrical white round patch on both sides at the macula lutea occupying its place. In the centre of this white patch is a deep, cherry red, round spot. The optic disc is pale and gray, as if beginning to degenerate. The infant is not totally blind; conjunctival reflex is present.

*Note.*—When a sound is made, such as knocking on the table, the infant seems to start and be quiet. There is hyperacuity to sound. Muscles react to faradic current, but with a delayed contraction.

CASE II.—Female infant, aged one and one-half years; weighs seventeen and one-half pounds. Mother, who is Russian, is a nervous woman; has had eight children, four of whom are alive; none suffered, however, from a disease similar to that of the patient. Father is a healthy individual. Infant was born with breech presentation. It was in apparent good health and until the fifth month was much like other infants. At this time it sustained a fall from its chair. After or about this time, the infant began to decline. It did not play or reach for objects, or smile, or sit up. It became listless and would only cry, the mother says, when hungry. It became in time more and more stupid and did not seem to grow or attempt to walk or sit up. Constipation marked. Takes its food mechanically; mother does not think it sees objects.

*Status præsens.*—The infant lies in its mother's arms in a relaxed state. The face has a fatuous, vacant look; the tongue is alternately protruded and withdrawn. The color of the infant is pale; has two upper incisors somewhat eroded. Does not appear to notice objects, although it winks if finger is brought close to the eye. When placed on the examining table, the infant lies in a relaxed state, rolling its head from side to side. The extremities, if closely watched at this time, are noticed to stiffen and relax alternately (spastic phenomena). If the infant is touched it starts; knee reflexes are increased. Muscles hang flaccid on the thighs and arms; abdomen relaxed; arms are at times stiff and flexed, at others relaxed. If the infant is taken up in arms, its head falls forward on its chest and the arms hang at its sides and the body doubles up in an apparently lifeless state, so great is the paresis.

Eyes examined by Dr. Cowan. When the baby's eyes are illuminated by the ophthalmoscope, it appears to follow the light slowly. The fundus oculi of both sides, at the situation of the

macula, shows the same symmetrical appearance described in Case I., a white, round disc with a very distinct, deep, cherry red spot in the centre. The borders of the white disc seem hyperæmic. The optic disc shows little change.

The diagnosis in both these cases was made from the rational symptoms and physical signs, by the author. The ophthalmoscopic examination of the eyes in both of these cases, fixed the diagnosis beyond the shadow of a doubt.

It seems this ophthalmoscopic find occurs in all the cases of this affection and it is now described as first by Tay in his case. I quote from Adam's atlas on the fundus oculi: "The central region of the fundus of the eye is occupied by a soft, white patch having a diameter of 1.5 to 2. dd. In the middle of this is a cherry red spot. It is evident that the central vision is not lost in the earlier stages, for the child fixes the light during the

PLATE III.



PLATE III. SHOWS SPASTIC STATE OF THE LOWER EXTREMITIES IN THE RECLINING POSTURE IN CASE I.

ophthalmoscopic examination. It is possible that the fixation point is surrounded by a wide belt of blindness, corresponding to the white retinal area." "In some cases there is optic neuritis going into atrophy, but in most when first seen, the macula in each eye alone presented anything abnormal," as described above.

Kingdon confirmed the findings of Tay, and in this country the disease has become known principally through the writings of Sachs. This author, as also Kingdon, was particularly fortunate in obtaining autopsies. Tay first observed several cases occurring in succession in the same family, and this has been confirmed by Kingdon and Sachs. Of twenty-two cases thus far recorded, inclusive of the cases of Koller and Heiman (confirmed by Sachs), fifteen were observed in eleven families.

Thirteen were girls. Though the cases thus far, with the exception of Tay's cases, have been observed in Hebrew families, there seems to be nothing in this fact but a matter of accident of material. Of the eleven families, there was a history of syphilis in five only. Etiologically, there have been found, thus far, only family predisposition, neurotic taints, blood relationship, and traumatism during pregnancy, or, as in the writer's cases, a questionable traumatism later in life.

The symptomatology already detailed may be summarized under the following headings:

Mental impairment observed during the first months of life, leading to complete imbecility or absolute idiocy; with this a paresis or paralysis of the whole muscular system, with or without spastic symptoms. A gradual progressive impairment of vision, leading to absolute blindness, with the very characteristic changes in the macula lutea. The reflexes may be increased or wanting. In some cases nystagmus, hyperacuity to the least noise, strabismus, convulsions, have been observed.

*Pathology.*—We have the data of two *post-mortems*, and these incomplete, to clear up the pathology of this affection. The general picture resembles so much a paresis seen in the insane, that some (Koller) have concluded that the process is a degenerative one. The consensus of opinion (Kingdon, Sachs) seems, however, to be, that the whole picture from the pathological findings, is one of arrest of development. Sachs bases his argument in support of his views, on the conformation of the fissuration of the brains of these infants. There is a prolongation of the first temporal fissure, and a confluence of the central fissure with the fissure of Sylvius. This, according to Wilder and Mills, argues a low form of development. Van Giesen examined the case of Sachs, and his findings agree with those of Kingdon, so that they both may be grouped as follows:

Thickening of the arachnoid and pia mater, hardness of the cortex of the brain; indistinctness of the different layers of the pyramidal cells of the cortex; the large pyramidal cells were rounded or oval; the protoplasm had lost its granular appearance and was collected together in an irregular, shrunken mass about the nucleus, leaving large spaces between the contents and cell wall; the same changes, but to a less degree, were found in the smaller pyramidal cells. Deiters' cells increased; sections of the upper part of the cord showed marked



descending degeneration (Kingdon); Treacher Collins seems to have found œdema of the retina—though the appearances at the macula lutea have not been fully explained.

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**The Pelvis in Lame Children.**—Prouvost (*Revue Obstet. Internat.*) says the obstetric prospects of little girls troubled with lameness are compromised, and as this, like many worse infirmities, does not always exclude the sufferer from marriage and impregnation, the extent to which the pelvic bones may become involved is a matter of interest to the obstetrician. Prouvost holds that in order to safeguard the pelvis the child must never walk without the aid of two crutches. In seven cases where no support was used, the child hobbling about without crutches or even a stick, there was distinct flattening of the pelvis on the side corresponding to the lame leg. The use of a stout stick or even of one crutch was found insufficient, in all observed cases, to insure thorough development of the pelvis even when the deformity began at about the fourteenth year. In short, the crippled girl must make use of crutches till she is at least sixteen. In his paper Prouvost discusses the orthopædic aspect of the question very thoroughly.—*Massachusetts Medical Journal*.

## THE TREATMENT OF LITHÆMIA.

BY B. K. RACHFORD, M.D.,

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The dietetic treatment of lithæmia is of the first importance in infancy, as it is at all periods of life. Mother's milk is an ideal food for lithæmic infants, but when it becomes necessary to supplement this food, it is best to do so with cow's milk, to which cereals have been added. I have been much impressed with the importance of adding barley or rice water to cow's milk as a food for these children. Jacobi for many years has enthusiastically advised that cow's milk, as a food for infants, should always be mixed with cereals, and it is my experience that this admixture with cereals is of special importance to lithæmic infants. Beef juice and meat soups and teas should not be given to lithæmic infants or children. They are at all times contra-indicated. When the lithæmic infant becomes a child, the milk and cereals, including bread, should continue to occupy the most important place upon his bill of fare. Milk and cereals are, in fact, ideal foods for lithæmics of all ages. As the child develops it becomes necessary to add eggs, fish, and poultry to his diet. These foods are very much to be preferred to butcher's meat as a means of furnishing proteid food to the rapidly developing lithæmic child. Butcher's meat may, however, be allowed in small quantities once a day to lithæmic children who lead an active outdoor life.

In advising as to the proscribed and prescribed proteid foods for lithæmic children, it is well to keep in mind that the following foods are to be recommended in the order named: Milk, eggs, fish, oysters, poultry, game and butcher's meat. At the beginning of this list we have the best, and at the end the worst foods for lithæmics of all ages. Lithæmic children should be taught early to eat vegetables and fresh fruits. In fact vegetables and fruit should be the basis of the diet of lithæmics at all times and at all ages. Fresh fruits and fresh vegetables should enter largely into the diet of all lithæmic children, and these foods, together with milk, eggs and cereals, should constitute the almost exclusive diet of these children, until they are old enough to live a very active outdoor life. Then, as above indicated,

fish, poultry, and in small quantities butcher's meat may be added to the diet.

In the treatment of adults I advise that they eat moderately of simple food, and abstain absolutely from wine and malt liquors. In this bit of advice we have a condensed statement of the dietetic management of lithæmia. Over eating is a factor in its cause and under eating is a factor in its cure. Lithæmics, for this reason, should be advised against taking an excess of food of any kind. Meats may be taken only in such quantities as are necessary to supply the proteid waste and repair of the body, but it will be found that most lithæmics take meat largely in excess of this quantity. It will, therefore, be necessary to place restrictions on the quantity of meat taken, and substitute for the meat, poultry, game, fish, oysters and eggs, as above directed. No harm, however, can come to lithæmics, leading an active life, from the moderate use of these simple foods. The only care necessary is to avoid an excess of these foods, and to see that they are prepared in a simple and digestible form. Fries and salads are objectionable, and fresh pork, lobsters, and crabs are not to be commended. Sweets, such as candies, pastries, and preserves, are to be used sparingly, if at all. The knowledge that sweets are injurious to lithæmics is a bit of information born of clinical experience upon which almost all writers are agreed. Sweets are, therefore, to be restricted, even though we cannot trace the connection between this class of foods and the nitrogenous poisons which are thought to be the cause of the symptoms of lithæmia. Milk, cereals, fresh fruit, and fresh vegetables should continue to be the most important foods of lithæmics throughout life. At the two extremes of life they should constitute almost the exclusive diet of these patients, but during late childhood and early adult life, this being the period of growth and greatest activity, it is necessary to supplement this diet with proteid foods as above directed.

Exercise in the open air is scarcely less important than diet to lithæmic children. They should, therefore, be encouraged in all kinds of outdoor athletic sports. It will be found that many of these lithæmic children require a great deal of urging and commanding in order to have them take the proper amount of exercise in the open air. It is a common observation that lithæmic children are averse to outdoor exercise and very fond of indoor intellectual pursuits. The out of school companions of



lithæmic children should be bicycles, skates, and tennis racquets instead of books. Wholesome exercise in the open air is necessary to the proper physical and intellectual development of any child, but lack of exercise is especially baneful to one of inborn lithæmic tendencies. Exercise promotes nitrogenous metabolism by furnishing the conditions for the more complete oxidation of the alloxuric bodies into harmless nitrogenous extractives. The air in which the exercise is taken should be as pure as possible. City children of this type should have two or three months of active out of door life in the country every year. They may be sent to the seashore, the mountains, or a neighboring farm, with almost equal advantage. Fothergill believed that a certain amount of pure country air was absolutely necessary to the satisfactory development of lithæmic children.

Before beginning the medical treatment of lithæmia, one should make a careful search for such reflex factors as may possibly contribute toward precipitating lithæmic paroxysms. If eye-strain exists, it should be corrected. If pelvic or rectal diseases be present, they should be treated. In short, all reflex factors should, if possible, be removed before other treatment is commenced. While I am convinced that the reflex factors have had undue prominence given them in the study and treatment of lithæmic paroxysms, yet I am not pessimistic enough to believe that they should be disregarded in the treatment of these conditions. Pelvic disease, I think, especially demands treatment when it occurs in cases where the lithæmic paroxysms coincide with the menstrual period. The failure of medicinal and dietetic treatment to cure certain lithæmic paroxysms may sometimes be due to the fact that there is present some eye, preputial, or pelvic disease, which continues to act as a potent reflex factor in calling forth these paroxysms. The fact should also be noted that many of these lithæmic conditions yield to treatment, notwithstanding the existence of potent reflex factors which yet remain untreated.

The medical treatment of lithæmia should aim to cure constipation and to favor the elimination and promote the oxidation of the alloxuric bodies which are believed to be the *materes morbi* of this affliction. The medical treatment of this condition, especially in infants and children, may advantageously be begun with small doses of calomel and soda, repeated at short intervals until catharsis begins. After a day or two of rest from

medication our little patients may then be given some form of eliminative treatment. Volumes have been written on the treatment of lithæmia by drugs which are given for the purpose of eliminating the poisons of the disease, and there always has been, and possibly will be for some time to come, much confusion on the comparative value of these drugs. Carefully formed individual opinions will, therefore, continue to be of much value in clearing up the medical treatment of lithæmia. It is my belief that the salts of salicylic acid are the most valuable eliminative medicines we have. After the preliminary calomel treatment, it is my custom to place the child on some sort of salicylate treatment. The exact nature of this treatment will depend upon the age of the child and the nature of the lithæmic manifestations. Salol is an especially valuable remedy in infantile lithæmia. I have seen lithæmic infants suffering from chronic intestinal fermentation with gastric crises, very much benefited by giving one grain of salol after each nursing. Other intestinal antiseptics will not obtain the same results in these cases, and it is not, therefore, simply a question of intestinal antiseptics. The salol in these cases must be continued for weeks or months, in doses to suit the age of the child. If the lithæmic manifestation be an eczema, salol is equally advantageous. To these infants I also commonly give a few grains of phosphate of soda or benzoate of lithia, dissolved in the milk of their nursing bottle. An infant two years of age may be given in this way twenty grains of the phosphate of soda and three grains of the benzoate of lithia in twenty-four hours. The three drugs mentioned, salol, phosphate of soda, and benzoate of lithia, are the ones commonly relied upon in the treatment of infantile lithæmia and with them great good can be accomplished if they be intelligently used, in connection with such other dietetic, hygienic or local treatment as the special lithæmic manifestation may suggest. Should the phosphate of soda not answer the purpose as a laxative (all of these cases are constipated), it then becomes absolutely necessary to supplement this treatment with a laxative which will evacuate the upper bowel. Enemas and suppositories are not to be depended upon for this purpose. They may be used as an assistance to other laxative treatment, but they are not to be relied on exclusively. I wish here to especially insist that this laxative treatment is as absolutely necessary to the success of the treatment in the lithæmia of infants and

children as it is in adults. Salicylate of soda may be given instead of salol to children after they are five or six years of age. The salicylate of soda made from wintergreen is preferable because it is more palatable and less irritating to the gastric mucous membrane. It should, if possible, be given in a little seltzer water, which may for convenience in using, be obtained in a siphon. The siphon of seltzer may be kept in a cool place and the seltzer water may be siphoned into a glass which contains a dose of salicylate of soda. The addition of seltzer water in the way described makes it possible to give salicylate of soda for an indefinite time, without disgusting the palate or irritating the stomach. When the child reaches an age that it will take without protest the salicylate of soda in the way described, then it is to be preferred to the salol, but prior to this time the salol is to be used. But while the salicylates are our best remedies in all forms of lithæmia, the salts of lithium are also of some value in the treatment of certain manifestations of this disease. The natural lithia waters may be used in the treatment of lithæmia and it is much in their favor that these waters are tasteless and therefore readily taken by infants and children. Much of the benefit that comes from the drinking of lithia water is due to the water itself, rather than to the lithia it contains. Many lithæmic patients will be found to take small quantities of liquid, and such as these will be benefited by increasing the quantity of liquid taken in twenty-four hours. Mention has previously been made of the importance of giving newly-born infants water to drink. In such infants water is often needed to bring in solution and thereby favor the excretion of urates which might otherwise irritate the inflamed urinary passages. For the same reasons lithæmic patients of all ages are benefited by the drinking of water. Much of the benefit that comes to these patients from the drinking of sulphur and other waters at the springs, comes from the large quantity of water taken, rather than from the medicinal properties of these waters. Yet, in giving full credit to water as a remedial agent in the treatment of lithæmia, one must not overlook the fact that many of these waters contain salts that are of real value in the treatment of this condition. Lithia is one of these salts, which has, as I have said, some value. Of the lithia salts, benzoate and the citrate are much to be preferred. I am given to the use of the benzoate almost to the exclusion of all other lithia salts, because I believe I get better results with



this salt of lithia than any other. To young children one may give gr. ss-i three times a day dissolved in milk. To older children it may be given in tablet form, or dissolved in water. The citrate of lithia is somewhat less efficient, but it is more palatable than the benzoate. I have under observation at the present time a lithæmic child now three years of age. She inherits a strong lithæmic tendency and has had many manifestations of this affection since she was six months old. At intervals of six or eight weeks she will have an attack of painful urination, lasting from three to six days. During these attacks the urine is acid and has a heavy deposit of urates. She screams with pain on passing urine during these attacks; she is irritable, fretful, and sometimes slightly feverish. The external genitalia are reddened and inflamed by the passage of urine at these times. These attacks can be relieved and warded off by the lithia waters. During the past year this child has been drinking these waters and in this time has never had an attack, except when the lithia water was stopped as a matter of experiment.

The soda salts are of great value in the treatment of lithæmia, and the mineral waters which are composed largely of these salts, such for example as Carlsbad, have a well deserved reputation in the treatment of this condition. Phosphate of soda, above-mentioned as a valuable salt in the treatment of lithæmia in infants and young children, is of value in the treatment of this condition at any time of life. It has long had the reputation of being one of the best uric acid eliminators. It should be given in large doses of sixty grains to an adult and ten to fifteen grains to an infant, three times a day. In infants and young children it can best be given in milk. But phosphate of soda does not, as a rule, in older children and adults, produce the cathartic action which is absolutely necessary to the successful treatment of lithæmia. It may for this reason be advantageously combined in the same prescription with sulphate of soda. This will insure sufficient cathartic action. The following prescription has long been a favorite with me in the treatment of lithæmia. I have used this prescription for a number of years as the basis of the medical treatment, in almost every case of lithæmia in older children and adults, that has come under my observation:

R̄ Sodii salicylatis (from oil wintergreen), 2 drachms,  
Sodii phosphatis (dry), - - - 4 drachms,  
Sodii sulphatis (dry), - - - 12 drachms,

M. S.—A teaspoonful, more or less, to be taken in a glass of Seltzer water every morning.

I have given this prescription, or a modification of it, for months at a time, without producing gastric irritation and with the most satisfactory results in the relief and cure of lithæmic manifestations. It is very important that dry salts be used in this prescription. The dose is to be regulated by the cathartic effect. Violent daily catharsis is not to be desired, but a decided laxative effect must be produced. It is evident that the amount of sulphate of soda in this prescription may be increased or diminished to suit individual cases. At the present time I am using very largely, in my practice, the following modifications of the above prescription. It will be seen that these formulæ, given below, combine the drugs which I have noted as being of special value in the treatment of lithæmia:

R/

Sodii sulphatis (crystals),	-	-	120 grains,
Sodii phosphatis (crystals),	-	-	50 grains,
Sodii salicylatis (from wintergreen),	-		10 grains,
Tincturæ nucis vomicæ,	-	-	3 drops,
Aquæ destil., to make	-	-	4 ounces.

M. S.—Take each morning before breakfast.

R/

Sodii sulphatis (dry),	-	-	30 grains,
Sodii salicylatis (from wintergreen),	-		10 grains,
Magnesii sulphatis (crystals),	-	-	50 grains,
Lithii benzoatis,	-	-	5 grains,
Tincturæ nucis vomicæ,	-	-	3 drops,
Aquæ destil., to make	-	-	4 ounces.

M. S.—Take each morning before breakfast.

These and other modifications of the prescription above given I have had charged with carbonic acid in siphons. In this way I can prescribe the above formula in siphons, with the direction to take from one-fourth to one-half a glass of this siphon medicine before getting out of bed each morning. In the beginning of the treatment it is advisable to have the patient take this medicine before getting out of bed. In this way the nausea, that sometimes follows the beginning of this treatment, is avoided. In the treatment of hundreds of cases of lithæmia I have yet to find a patient, except among young children, who refuse to take this medicine. It will agree with any stomach and may be continued indefinitely without disgust,

nausea, or irritation. The dose of this siphon medicine is to be regulated by the age of the patient and the cathartic action produced. It is absolutely necessary to the success of the treatment that a laxative or slightly cathartic action be produced. This can, as a rule, be effected with the siphon medicine alone, but in some cases when the constipation is troublesome it is advisable to give a mild cathartic at bedtime and follow this with the siphon medicine in the morning. It is better to do this than to give more than one-half a glass of the siphon medicine to produce a cathartic effect. The cathartic taken at bedtime may be cascara sagrada or any simple laxative pill. In the treatment of lithæmia, it is now, and has been for some time, my custom to give the siphon medicine every morning for one or two months and then every other morning, or once or twice a week as long as I think this treatment should be continued.

In connection with the siphon treatment above described I commonly use a one grain salol-coated pill of permanganate of potassium (made for me by the Upjohn Pill & Granule Co.). This pill is to be taken after each meal. The permanganate of potassium is given not only as an intestinal antiseptic, but also because it is a strong oxidizer and may in this way render innocuous the poisonous uric acid leukomaines which have much to do with the production of lithæmic symptoms. However this may be, clinical experience teaches me that permanganate of potash is of value, it matters not what may be the theory of its action. These pills should be salol-coated, that they may be non-irritating to the gastric mucous membrane. Such salol-coated pills may be given for an indefinite length of time to patients who have long suffered with irritable and diseased digestive organs. With the above line of treatment I have much success in the treatment of some of the most troublesome forms of lithæmia. With other types of lithæmia, however, this line of treatment results in only a moderate degree of success.

Especially would I call attention to the treatment of migraine by this method. There is one type of migraine, as previously noted, in which the severe headache is associated with nausea and vomiting. This type can, as a rule, be entirely relieved by this treatment, when combined with the dietetic and hygienic measures previously outlined. I have observed that the more pronounced the gastric symptoms, the more amenable these cases are to this treatment. This treatment is, therefore, espe-



cially adapted to the relief, and sometimes the cure, of the severe paroxysmal headaches associated with nausea and vomiting, and it is almost of equal value in the treatment of the gastro-enteric type of lithæmia; that is to say, in those cases in which the gastric attacks of pain and vomiting are not associated with headache. I have also seen it act almost as a specific in the nervous dyspepsias of lithæmic origin, which are commonly associated with such neurasthenic symptoms as excessive irritability and great depression of spirits. In brief I may say that one may expect good results to follow this line of treatment in all lithæmic manifestations, which are in any way associated with gastro-enteric symptoms. I have patients now under observation who have not had an attack of sick headache in two years, who prior to being placed upon the above treatment had two or three attacks in the month. In a number of these patients, now entirely relieved, the attacks were so severe that morphine, hypodermatically, was the only drug that gave relief. I am sure that some of these have been saved from the morphine habit as well as relieved of one of the most distressing ailments. I have also succeeded in curing a number of these cases in which the morphine habit was firmly established.

Eighteen months ago I was asked to see a boy twelve years of age, who was suffering frightfully from migrainous attacks. The boy came from a highly intellectual and lithæmic parentage, and from the age of seven he had been having severe periodic headaches, accompanied with nausea and vomiting and sometimes with gastric pain. His eyes, ears and throat had been carefully searched in vain for a reflex cause of these headaches. It was in April when I saw the boy for the first time, and learned that he had been having two or three headaches a month all winter. These headaches sometimes confined him to bed for several days and occurred at such short intervals that he was barely convalescent from one when he was attacked by another. His general condition was also bad; he was pale, thin and had an anxious look about his face, which marked him as a sick boy. I placed him on the above treatment and he had but one headache in the next twelve months, and that one was shortly after the beginning of the treatment. During the past winter this boy has attended school regularly. He never missed a day on account of sickness. The boy's general health is much improved. Diet and open air exercise have been valuable adjuncts to the

medical treatment in bringing about this very satisfactory result. This case is but one of many in which I have obtained a like result. The successful cases are by no means confined to children. Adults respond as readily as children to this treatment. One of my most successful cases was in a woman over sixty years of age, who had suffered from sick headache and other lithæmic manifestations since she was a young girl. I saw her for the first time last October. At that time she was suffering from frightful attacks of headache, which confined her to her bed almost half the time. She had been treated by all kinds of specialists in almost all of the larger cities in the east. I placed her under treatment and from that time to this, a period of nine months, she has had but one severe headache and her general condition is vastly improved.

There is another form of lithæmic headache, which may be designated migrainous neuralgia, that is not accompanied by nausea or other gastro-enteric symptoms. These headaches are paroxysmal and not infrequently are connected with the menstrual period. Such lithæmic headaches occurring without nausea, do not yield readily to the above line of treatment, yet these headaches are also benefited by the siphon medicine, if it be persisted in for a sufficient length of time. But the permanganate of potash pill is, in my experience, of but little value in the treatment of this type of headache. It is in this type of headache that I have derived the greatest benefit from *cannabis indicus*, which I usually give combined with salol, as in the following formula:

R/

Cannabis indicæ,	-	-	-	-	gr. iii.
Salol,	-	-	-	-	gr. lx.
M.	Div. in capsul. no. xii.				
S.	One after eating.				

This prescription may be continued for months at a time if necessary and is always to be used in connection with the siphon medicine. The *cannabis indicus* and salol capsules may also be used in connection with the siphon medicine in the treatment of lithæmic epilepsy. These most distressing cases are, as a rule greatly benefited by this treatment. In brief I may say that the *cannabis indicus* and salol capsules may take the place of permanganate of potash pill in all severe lithæmic paroxysms which are not associated with nausea or vomiting.

Where these symptoms exist, as above stated, the permanganate of potash is a valuable aid in the treatment.

In the above outline I have briefly presented a plan of treatment which I have come to look upon as something of real value in the treatment of lithæmia. Yet this outline does not mention all the drugs which are of value in the treatment of this condition. There are, in fact, many other drugs which have found favor in the treatment of this condition. Among such drugs the dilute nitro-muriatic acid and colchicum deserve special mention. Dilute nitro-muriatic acid in five to ten drop doses, well diluted, after meals, may be given to older children and adults with decided benefit in the treatment of migraine and other lithæmic paroxysms. Colchicum is also of unquestionable value in the treatment of lithæmic neuralgia. Five to twenty drops of the wine of colchicum, taken, well diluted, after meals, will often be found of value in the treatment of painful lithæmic affections. The dose must be regulated to suit the age and idiosyncrasies of the patient. Only a word will be said concerning the employment of the natural mineral waters in the treatment of lithæmic conditions. For stout and vigorous patients these waters are of great value. The thermo-alkaline springs of Virginia and Arkansas are of especial value in the treatment of this type of cases. The waters of the Carlsbad type may also be expected to benefit these patients. The Bedford Springs of Pennsylvania, the Crab Orchard Springs of Kentucky, the St. Clair and Mt. Clemens Springs of Michigan, the Saratoga Springs of New York and the West Baden and French Lick Springs of Indiana may be recommended to lithæmics.

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**The Craig Colony as an Example.**—It is gratifying to observe that the work done in the Craig Colony for Epileptics is already being held up abroad as worthy of imitation. “The example of New York State,” says the *Lancet*, “might well be copied by the English poor-law authorities, and the epileptic colonies now in existence be taken in hand and generously supported.” Excellent work, our contemporary adds, is being done at Chalfont and other institutions in England, but for want of funds comparatively few colonists can yet be accommodated, and much outlay is still required before suitable employment can be found for all in summer and winter.—*New York Medical Journal*.



## A CASE OF INFLUENZA WITH PERSISTENT RESPIRATORY FAILURE IN AN INFANT OF FOUR WEEKS.\*

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The following case is recorded because of the long duration of its grave symptoms, the heroic treatment to which a very young infant was subjected, the apparently happy and, it must be confessed, unexpected effect of antipyrin used in the last extremity, and, finally, the restoration to complete health.

On Christmas eve, 1896, I was hurriedly called to Mrs. A., who had been in labor for several hours and whose physician had not yet arrived when the conditions were becoming urgent. A male infant, weighing seven and one-quarter pounds, was born about twenty minutes after my arrival. The delivery was natural and easy, and the child was perfectly formed and apparently in normal condition. The arrival of the regular attendant, shortly after the delivery of the placenta, terminated my connection with the case for the time, and I did not see the baby until called again, on account of the illness of the attending physician, on the 18th of January, 1897, the twenty-sixth day of the baby's life. I then learned that he had been nursed at the breast for only two weeks, when, in consequence of failure of the maternal supply, artificial feeding had been begun, at first with condensed milk, one to sixteen, for the third week, and for the fourth week with a mixture of six parts of milk and five parts of barley water, under which he was beginning to improve. The weight was eight pounds. He had suffered from a purulent ophthalmia of rather benign character, which had not entirely disappeared from the left eye, and he had been jaundiced during the first two weeks. It had been observed by the nurse that since its birth the baby had been rather "too good," never crying lustily and seeming to need to be forced to take his bottle. The bowels and kidneys had acted normally. At this visit I was told that the baby had begun to cough, and that several members of the household were suffering severely from influenza, which was then quite prevalent. Examination, however, showed that the lungs were not affected, and the temperature, pulse and respiration were normal. During my visit he coughed

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\*Read before the Philadelphia Pediatric Society, April 13, 1897.

once; this was rather dry, somewhat sharp, and slightly hoarse in character. Small doses of syrup of ipecac were ordered.

I was called again two days later, on the 20th of January; the cough and general condition were about the same as at the previous visit, the only additional treatment needed being a diuretic mixture of spirits of nitrous ether and solution of potassium citrate. The mother was now suffering from an acute pharyngitis and rhinitis. No distinct change in the baby's condition was observed until the afternoon of January 22d, when he refused most of his feedings and looked pale and sick. I saw him that evening about eleven o'clock. He was pale and rather weak; the temperature was normal, and the pulse somewhat irregular and weak, but not accelerated beyond its usual rate. Over the base of the right lung posteriorly a few fine râles were heard at the end of inspiration, without change in percussion resonance or vocal fremitus. The cough was about the same as before, but was not frequent and I did not then hear it. Counter-irritation of the chest and stimulation were ordered, with forced feeding to be kept up hourly during the night.

The next morning, I was hastily summoned about 7.30 A.M., and found the child somewhat rigid, breathing very superficially, and somewhat cyanotic. Under the stimulation of a hot bath the respiration improved for a time. Digitalis, one-quarter drop, with one grain of mixed bromides hourly was at once ordered, and several hot baths were given for slight spasmodic seizures apparently dependent upon efforts at cough. At 12 M., the pulse was 108, of fair quality; respiration was shallow and weak, about 40 to the minute, the pupils contracted, and slight stupor was apparent. One fifteen-hundredth of a grain of atropine sulphate was given hypodermatically, with the third dose of bromides by the mouth. Swallowing was rather difficult and no food had been given since the beginning of the severe symptoms until 12.45 P.M., when three teaspoonfuls of milk mixture were swallowed, but excited a laryngeal spasm which was relieved by the hot bath, now kept ready at hand, followed by several vigorous slaps on the back, which terminated the attack by provoking cough.

A second spell occurred at 1.40 P.M., relieved as before, and a second hypodermic injection of atropine was given. At two o'clock a third paroxysm occurred, being excited by a few spoonfuls of milk, and three more followed within an hour. The fourth dose of bromides was given just before the last of these attacks, which were now increasing in severity and danger. After a period of quiet and fairly comfortable breathing the respirations would become more and more shallow, while gradually increasing cyanosis of the whole surface would appear, the mucous membrane of lips, mouth and tongue assuming a dark, blackish-blue color; respiration was apparently suspended, no appreciable motion of the chest-wall being noticeable. With this there was some

general rigidity of the limbs without convulsive movements, up to this time. Immersion in a rather warm bath, followed by strong slapping over the back, was sufficient after a quarter of a minute or more to start up respiratory movements again with a cough or cry. Three of these attacks occurred between three and four o'clock, when another hypodermic injection of atropine was given, (making a total of one five-hundredth grain since noon) together with the fifth grain-dose of bromides. Between four and five o'clock two more paroxysms occurred, the last one of these being seen by Dr. Louis Starr, who had been called in consultation. In this attack the cyanosis at first present was succeeded by a grayish pallor; and total suspension of respiration lasted nearly a minute before the bath and more vigorous beating over the chest relieved the spasm and terminated the attack in slight cough.

Shortly after five o'clock another severe attack occurred, this showing more of the symptoms of ordinary convulsion, though the limbs were rigid and clonic movements were noticeable only in the eyelids and the ocular muscles. The same treatment was successful. The dose of bromides was now increased to two grains hourly; and about two teaspoonfuls of a cream and barley water mixture with five drops of whiskey was taken in very small quantities about 5.30 P.M. Fifteen minutes later another severe paroxysm occurred, the convulsive movements of the globes being marked, but the cyanosis was not so extreme. At 6 P.M., a fourth hypodermic of atropine was given, and by suppository one grain of asafœtida. During the hour following two less severe paroxysms occurred, and two teaspoonfuls of cream mixture and whiskey were taken. At 7.15 P.M., a slight seizure occurred, but recovery was longer delayed than it had been previously, and for this reason it was deemed wise to provide ourselves for the night with a cylinder of oxygen gas. Swallowing between attacks was fairly good and small quantities of cream mixture and whiskey were taken. Shortly after eight o'clock a severe attack occurred. During the oncoming of the cyanosis, while respiration was practically suspended, a stream of oxygen played into the nostrils had no apparent effect; but after the relaxation cough or cry its stimulating action was distinctly marked. At 8.30 P.M., the fifth hypodermic injection of atropine was given. The pupils were now somewhat dilated, but no other of the constitutional effects of atropine was apparent.

At 8.45 P.M., another attack occurred with characteristics somewhat different from those that had preceded. The spasmodic symptoms were now fairly under control and the muscular system was thoroughly relaxed, but the same tendency to respiratory failure remained, and proved more and more difficult to combat. In this emergency the oxygen proved of great service. At times a strong stream of the gas was forced into the



mouth, the lips being pursed up around the tube and the nostrils compressed; again the stream was directed through one nostril, the other being held closed. In this way the gas was forced into the lung and its vivifying effects were soon noticeable in improved color and re-established respiratory movements. We were evidently losing ground, however.

As an experiment, tongue traction after the method of Laborde was tried, but failed to give any more prompt result than was attained by the procedure already adopted. The efficiency of tongue traction in this case seemed to depend upon the reflex of pain caused by the pressure of the forceps used to grasp the tongue, just as the pain produced by rapid vibratory strokes of the hand upon the back produced sufficient stinging of the skin to provoke the cry that started off the respiratory movements.

At 11.30 P.M., the sixth hypodermic of atropine was given. At twelve, midnight, another prolonged spell of apnœa occurred. I now began to find that the shock of the hot bath, even with cold affusion over the sternum, was insufficient to stimulate the respiration, and the stuporous state was increasing. Flagellation over the back failed of its former effect and I was finally driven to slapping the buttocks and back with flexible strips torn from the lid of a large pasteboard box. The last dose of bromides was given about midnight, a total of eleven grains since 10 A.M., with a suppository containing one grain of musk.

A period of quiescence followed, until about 1.30 A.M., when a severe spell of apnœa occurred, which was treated as before, the attack ending with a cough that brought up a little stringy mucus. This was succeeded in a few minutes by a more alarming attack, from which it seemed the child could not recover. The bath and cold affusion alike failed, until finally I tried artificial respiration by the Schultze method of swinging, which was happily successful. At 2.15 A.M., another severe attack occurred, relieved by similar methods. Up to this time I had been able to keep count of twenty-nine attacks of more or less dangerous apnœa.

From this time till morning there was little that could be done but relieve the attacks that occurred with greater frequency and severity. Flagellation of the surface of the back and buttocks became in time less efficient, and I was finally led to fillip the cheeks and side of the head with the pasteboard strips. The skin reflex seemed more active here than in the other regions, where it had probably become exhausted. Oxygen served us in good stead and acted as a satisfactory stimulant after breathing became re-established. And so, through the most dreary night I have ever passed, the nurse and I rang the changes of hot bath, cold affusion, flagellation, artificial respiration and oxygen insufflation, expecting that each new attack would be the last.

Since midnight no food had been given, to avoid adding to the danger of strangulation; and the general condition had

grown steadily worse. The baby was completely relaxed and unconscious, temperature subnormal, and the fontanelle deeply depressed, the pulse, however, being of better quality than in the morning, and beating about 130.

The new day, however, brought new hope, and at 9.20 A.M., January 24th, one twelve-hundredth grain of atropine was given hypodermatically, and was repeated at eleven o'clock. The spells of apnœa continued to recur, but were not quite so alarming in character, and were skilfully managed by the nurse. During the night I had carefully considered the case in all its aspects and had thought of the possibility of whooping cough, since another child in the family, a boy of ten years, had been suffering for a month from a most suspicious cough, which, though probably influenzal in nature, had some of the characteristics of a mild pertussis. With this idea in mind, as a final effort, I determined to try the effect of antipyrin, and about 2.30 P.M., gave one-half grain hypodermatically (in 20 per cent. solution) with one-half drop of tincture of digitalis. A spell occurred about three o'clock, and again ten minutes later, after which two teaspoonfuls of cream mixture were swallowed, the first nourishment for fifteen hours. The hypodermic injection of atropine was repeated at 4.30 P.M., but shortly after 5 o'clock a severe spasm occurred, distinctly spinal in type, characterized by rigidity and opisthotonos. It began with a cough, and after relaxation some blood stained mucus was vomited, the blood probably coming from a slight wound of the tongue caused by the dressing-forceps used in traction. Half an hour later there was an attack of milder cyanosis, without convulsion, and half an hour after this an attack of cyanosis relieved by inhalation of oxygen. A second hypodermic injection of antipyrin with digitalis was given about 7 P.M.

At 8 P.M., I handed the case over to my friend Dr. Hand, after a continuous attendance of thirty-seven hours. The baby was distinctly better, and after Dr. Hand assumed charge no alarming attacks occurred, a few flashes of cyanosis in the early part of the night being relieved by placing the child in the prone position. A hypodermic injection of atropine (one fifteen-hundredth grain) was given about 10 P.M. The rest of the night was chiefly devoted to administering food, which was well taken and swallowed without disturbance. Increased rapidity of the pulse (180) due probably to the constitutional action of atropine, was observed, but was easily controlled by increasing the frequency of the one-half drop dose of digitalis. The temperature reached its highest mark about 5.30 A.M.— $101\frac{1}{3}^{\circ}$ , the pulse having come down to 140.

When Dr. Hand transferred the case to me in the morning, the general condition was decidedly improved, but the lungs were now filled with soft liquid râles, and it began to look as if we had escaped the danger of respiratory failure, to finally lose

our patient from bronchial engorgement with lack of power to cough up the obstructing secretions. Under tonic treatment, combined with reflex irritation of the nares by ammonia salts from time to time, the baby soon became able to relieve his lungs of the accumulating secretions. The respiration, however, was far from satisfactory, spells of cyanosis being of frequent occurrence, and the respiratory movements remained feeble and shallow. Here again the oxygen was repeatedly administered, and another hypodermic injection of atropine was given. About noon I was obliged to leave the patient for a time, and being satisfied of the beneficial effects that had followed the use of antipyrin the day before, I directed the nurse to give a hypodermic injection of one-half grain if the cyanosis should become more alarming. This she was compelled to do within an hour after I left her, because, as she told me, the baby was passing from one spell of cyanosis into another.

From this time improvement was rapid. No further alarming symptoms occurred; the cough became loose, strength was rapidly regained; secretion was easily coughed up; the temperature reached normal that same afternoon, and did not again rise.

After recovery the only sequel was a rather marked alternating internal strabismus, which remained for several weeks and gradually and completely disappeared.

Digestion has been perfectly normal and under a carefully graded diet the little fellow has been growing rapidly, gaining fully one half-pound a week. The present weight, at twenty-three weeks, is fourteen and one-half pounds.

Apart from the interest attaching to the recovery of so young an infant from so very grave an illness, attention seems to be drawn to the apparently felicitous action of antipyrin. I do not for a moment undervalue the effect of the bromides and atropine and the other means employed to keep up the vital functions so frequently threatened, but at the time I gave the first dose of antipyrin the condition seemed desperate, although the tendency to total suspension of respiration was perhaps not so marked as during the preceding night. The improvement in the general condition that began almost immediately after the hypodermic injection of antipyrin was certainly very suggestive. This effect was most clearly seen at the time the last dose was given by the nurse, when attacks of cyanosis were occurring in rapid succession.

At the outset the attacks of respiratory suspension were evidently spasmodic in character, depending upon a condition of irritability of the laryngeal mucous membrane which, in older



children affected during the recent epidemic, caused a cough closely simulating that of pertussis or the prodromal stage of measles. Later on, the increasing stupor and tendency to convulsion, accompanied by what was evidently centric failure of respiration, and the residual strabismus, pointed to pressure at the base of the brain, probably quite limited in area, and possibly to some extent involving the medulla. The rapid clearing up of all these symptoms points to a congestion or slight œdema. A point of interest here is the fact that previously, from birth, the baby had been unusually quiet and apathetic, and had never cried lustily; whereas, very soon after the acute symptoms subsided, his cries could be heard all over the house, and the parents and nurse remarked that he seemed much brighter and cried more like a healthy child of his age. The possible existence of some congenital weakness of the respiratory centre seems worthy of at least speculative interest.

During the long night of watching, the condition of respiratory failure at one time so closely resembled that of opium narcosis that once I hastily snatched up my bottle of digitalis to read the label, fearing that I had by some mistake been administering tincture of opium instead. It is but just to add that no preparation of opium had been ordered for the mother or child and none was to be found in the house.

With the dose of antipyrin used (one-half grain hypodermatically) there were no unpleasant effects observed, and this in a child unconscious and exhausted from lack of food and the ravages of a depressing disease.

108 NORTH 19TH STREET.

# ULCERATIVE GASTRITIS AND GENERAL INFECTION BY THE BACILLUS PYOCYANEUS IN CHILDREN.

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New York.

In 390 detailed autopsy records in young children—but eight being over three years of age—an inflammatory lesion of the stomach was noted eleven times. Of these, two were pseudo-membranous (non-diphtheritic) in character, five were ulcerative, and four both membranous and ulcerative. Cases of post-mortem softening (gastro-malacia) are, of course, not included here, nor are cases of congestion and punctate hemorrhage without distinct loss of substance.

Included in the ulcerative variety are three tuberculous cases, occurring in infants with severe general tuberculosis, and in which the anatomical diagnosis was confirmed by microscopical examination and the presence of the tubercle bacillus. All had tuberculous ulcers in the jejunum and ileum. In two the gastric lesion was single, situated on the posterior wall of the pyloric end, just above the greater curvature; while in the third two ulcers existed, one in the greater curvature at the cardiac end, the other smaller, close to the lesser curvature at the pylorus. Two of these children were fourteen months old, the third three months. Steiner<sup>1</sup> believed tuberculous gastric ulcers to be more common in children than in adults, but does not cite numbers for comparison.

No one of the gastric lesions partook of the nature of the simple round ulcer, nor did any one show evidence of perforation. It was the comparatively frequent recurrence of multiple gastric ulcers in non-tuberculous cases that called attention to the subject of their exact nature, and the bacteriological findings in two recent examples served to heighten their interest as well as their practical importance.

The six simple ulcerative gastritis cases all occurred in female infants; the youngest was four weeks, the eldest thirteen months old, two were seven months, one was three months,

and one seven weeks of age. It is well to note that my records include forty-four cases under two weeks of age, and five more between two and three weeks, or forty-nine cases of newly-born infants, less than three weeks old. In no one of these did the stomach show an ulcerative lesion. The facts are interesting, because Billard<sup>2</sup> has described this condition only as occurring in the newly-born, and saw fifteen cases between four and twelve days old; a plate in his atlas<sup>3</sup> gives a picture of the lesion as it occurred in one of these, twenty-six ulcers being present.

In all cases the ulcers were multiple, varying from three to seventy or more in number; in size they were from one twenty-fifth to one quarter of an inch in diameter, extending in depth through the mucous membrane only, or into the muscular coat; none penetrated to the peritoneal coat. In shape they were round, irregular only when due to the coalescence of several smaller into one large ulcer. There was distinct thickening of the gastric walls in four cases. The largest and most numerous lesions were on the posterior wall in every case, close to the pylorus, and nearer to the greater than the lesser curvature; only once were there ulcers at the cardiac end alone; in three there were ulcers on the entire posterior surface. Steiner described them as occurring in the fundus, and never saw more than four. Cruveilhier<sup>4</sup> saw them only in the cardiac end on the posterior wall, once also on the anterior wall. The plate in Cruveilhier's atlas shows the condition in three infants, aged respectively eight days, fifteen days, and one month. He calls the process follicular inflammation of the stomach.

In one of the six cases no other lesion was present throughout the gastro-intestinal tract; in two there existed a pseudo-membranous œsophagitis (thrush); in one an ulcerative proctitis; in one an ulcerative entero-colitis; and in one membranous enteritis and ulcerative proctitis. No constant relation between the severity of the gastric lesion and the condition of the remainder of the digestive tract existed, for one of the severest and deepest of the stomach lesions co-existed with a perfectly healthy œsophagus and intestine, while a very superficial stomach lesion was accompanied by the most widespread and deep-reaching ulcerative entero-colitis I have ever seen.

The diseases for which these children were admitted to the Babies' Hospital were as follows: athrepsia, three; gastro-enter-



itis, two; athrepsia and purulent conjunctivitis, one. In none was there any history of diphtheria, nor did any, at autopsy, show inflammation of the pharynx or larynx. While there were no unfailing clinical symptoms pointing to the gastric lesion, the severity and obstinacy of the vomiting, together with the intense prostration and evident pain of the children pointed to something more than an ordinary athrepsia.

The histories of the two following cases are given in detail, as being both clinically and anatomically characteristic of the condition:

CASE I.—Bessie M., seven months old; family history negative; nursed six months; since weaning has been losing weight.

*Status on Admission.*—October 22d. Six months old, small, poorly nourished, marasmic; length, 24 inches; head,  $15\frac{3}{4}$  inches; chest,  $12\frac{3}{4}$  inches; mouth normal; no teeth; lungs negative; weight, 8 lbs. 2 oz.; stools, thin, green and frequent; vomiting; refuses bottle and must be spoon-fed; food, modified milk, formula, 1-5-1; 4 oz. q. 3h.

October 25th. Fed peptonized food by gavage.

October 26th. Weight, 7 lbs. 10 oz.; stools thin, smooth, green and yellow.

October 29th. Weight, 7 lbs. 9 oz.; stools thin, lumpy, green; gavage.

October 31st. Cut two lower incisors.

November 1st. Weight, 7 lbs. 11 oz.; vomiting began.

November 7th. Weight, 8 lbs. 7 oz.; cyanotic; very weak; œdema of legs.

November 11th. Much general œdema; extensive spot of sub-cutaneous hemorrhage over left calf, extending rapidly, so that by the next day the entire left thigh was involved, and in a dark red, swollen condition.

November 12th. Weight, 9 lbs. 1 oz. In spite of free stimulation, died quietly at 7 P.M. The temperature had been very irregular, varying from  $95.4^{\circ}$  to  $103.2^{\circ}$  F.

*Autopsy.*—Twenty-four hours after death.

*Body.*—Emaciated; œdema of ankles, feet and legs; skin on dorsal surface of foot, extending also around outer surface of leg, shows diffuse reddish purple discoloration, darkest in the centre. Some discoloration on upper, outer, and under surfaces of left thigh, beginning about one inch above knee joint and extending upwards to pelvis. On buttocks eight to ten small excoriations.

On section, skin three-fourths of an inch thick in thigh; intense œdema and hemorrhagic infiltration of sub-cutaneous tissues; muscles of thigh in normal condition.

*Brain.*—Congested pia mater; no other lesion; weight, 1 lb. 6 oz.

*Heart.*—Normal; foramen ovale closed.

*Lungs.*—No pleurisy; acute red broncho-pneumonic areas in both lungs, which were œdematous; intense bronchitis and trachitis; larynx, normal; bronchial lymph nodes, small and red.

*Liver.*—Fatty to moderate degree; weight, 7 oz.

*Pancreas and Supra-renals.*—Normal.

*Kidneys.*—Few uric acid crystals in Malpighian pyramids at their apices; congested; no nephritis.

*Stomach.*—At pyloric end, near lesser curvature, mucous membrane congested on the rugæ, and a number of small pin-point elevations are present. On the posterior surface, extending on to the anterior, are two areas covered by a grayish yellow, adherent pseudo-membrane; islands of mucosa between are elevated and intensely congested. On the greater curvature are seven ulcers, from one-sixteenth to one-eighth of an inch in diameter, having raised edges, depressed gray base and a congested ring outlining them. At the cardiac end small ulcers are scattered over the entire surface; in all, about fifty ulcerations. (See Figure 1.) Stomach walls do not seem indurated at any point.

*Intestines.*—Normal throughout length of duodenum, jejunum and ileum; enlarged solitary follicles in the colon and in the rectum; one inch above anus, single ulcer one-fourth of an inch in diameter, round and superficial; base gray, dirty; edges slightly raised.

*Mesenteric Lymph Nodes.*—Not enlarged; on section, normal.

*Œsophagus.*—Normal.

*Anatomical Diagnosis.*—Acute broncho-pneumonia; fatty liver; congestion of spleen; pseudo-membranous and ulcerative gastritis; ulcerative proctitis.

*Microscopical Examination.*—Material fixed in 5 per cent. formaline, hardened in alcohol.

*Skin from Left Thigh.*—Intense congestion and œdema of the corium and sub-cutaneous tissue; individual connective tissue fibres of corium plainly visible in places, pushed apart by œdema; marked infiltration with round cells about the sweat glands, also

about blood vessels in dermis and sub-cutaneous layers; epidermis normal; stained with gentian violet and acetic acid, groups of short bacilli in the small blood vessels of corium and sub-cutaneous fat; also outside the vessels in the connective tissue meshes.

*Stomach.*—*Through a larger ulcerative area:* the glandular layer everywhere is infiltrated with cells; the lining epithelium



FIG. 1. Stomach from Case I., showing ulcers and pseudo-membranous exudation.

of the glands themselves is granular, and broken down; in several places small necrotic areas (5–6 glands in width) are seen, extending half or all the depth of this layer; at the point of the ulcer, the glands are entirely gone, leaving an irregular space with the necrotic and infiltrated muscularis mucosæ for base; in the centre a necrotic mass representing glandular layer is still present, and again an irregular break or tear appears, the further



border of which has separated from the base, and is on the point of being peeled off. The muscularis mucosæ has disappeared at several points, leaving the sub-mucosa in a condition of very marked degeneration and inflammatory infiltration as the ulcer base. In several places (see *d* in Fig. 2), irregularly round, or oval necrotic areas are seen in the sub-mucosa, just encroaching upon the muscularis mucosæ. About these there is marked exudation, and they appear to illustrate the earliest stage of the ulcerative process, *i.e.*, the mucosa is involved later or secondarily to the sub-mucosa. About the small venous vessels in the sub-mucosa are masses of exuded leucocytes, and the muscular coats are greatly infiltrated; the peritoneum is normal. Bacilli were demonstrated in and without the vessels in the sub-mucous coat, and also in the deepest part of the glandular layer. Cocci were present at the mouths of the glands. Stain for tubercle bacilli, negative.

*Bacteriological Examination.*—Cover slips from lungs, at the autopsy, stained by Baumgarten's method, show lance-shaped, encapsulated diplococci, and short bacilli singly and in groups; no threads. Slips from left thigh show bacilli only. Tubes of glycerine agar were inoculated from both lungs, both kidneys, pancreas and skin from left thigh, and placed in the thermostat. In twenty-four hours the lung tubes showed tiny, round, bluish white colonies in upper part of tube and also a moist, dense, yellowish white growth along the line of the needle.

The small colonies were identified on plates as pneumococci. On the following day all the tubes showed a green fluorescence in their upper portion, which deepened into a dark bluish green color of the entire agar. By plating, the pancreas, skin and kidney cultures were proven pure, and identified as the bacillus pyocyaneus. On glycerine agar the growth was moist, grayish or yellowish white, profuse and rapid, spreading over entire slant. A green color in upper part spread quickly, deepening into a beautiful bluish green. Old cultures became greenish black with a hint of brown. On plain agar, about the same growth, but on the surface a distinct metallic lustre appeared.

On gelatine there was a grayish white surface growth and progressive liquefaction of the champagne glass order, the upper liquid layer colored distinct green; the entire tube became fluid in four to five days, the surface film gradually sinking.

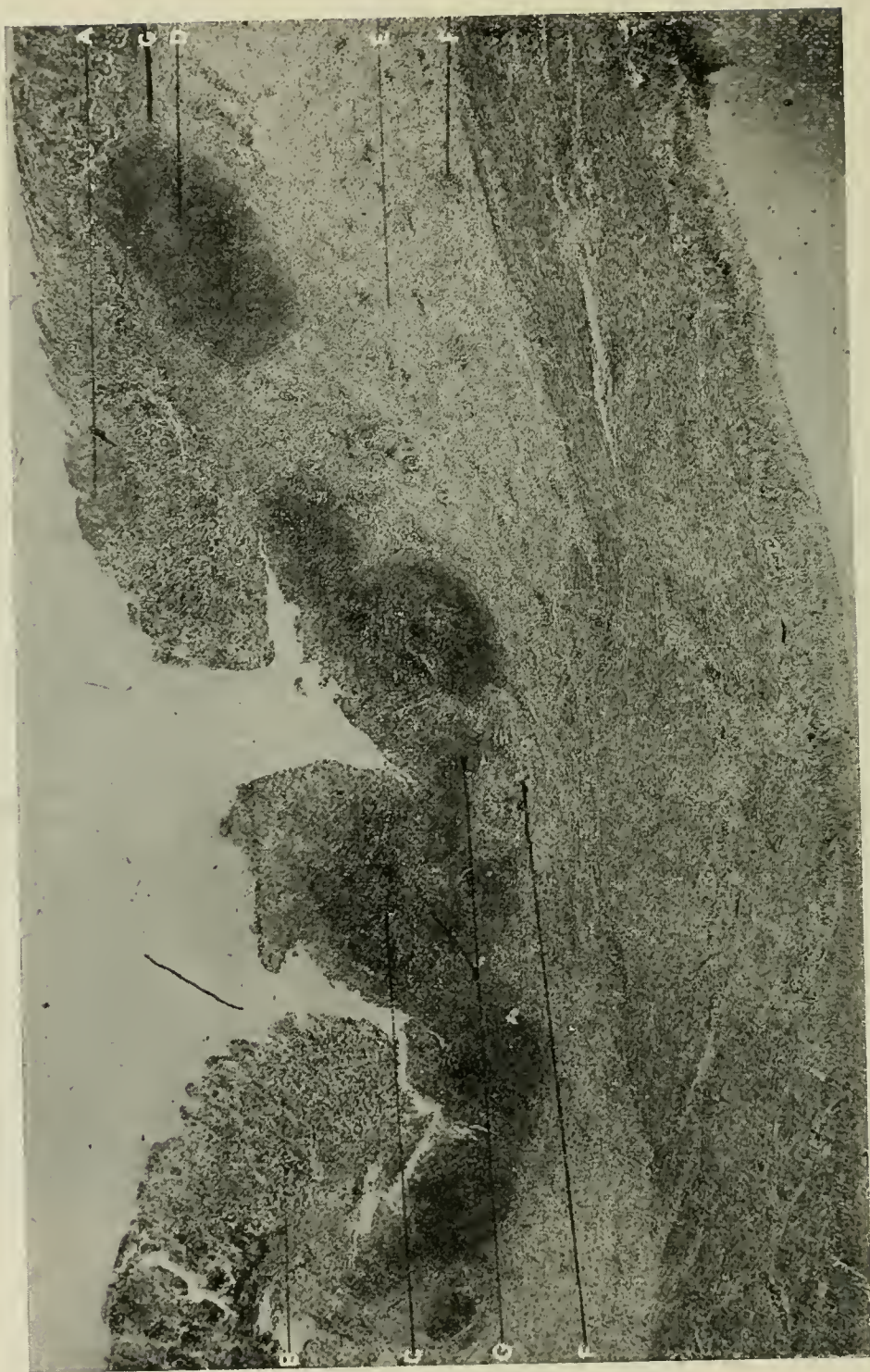


FIG. 2. Section through one of the larger ulcerative areas; (a) necrotic area in glandular layer; (b) gastric glands; (c) necrotic plug in centre of ulcer; (d) necrotic mass in sub-mucosa, encroaching upon muscularis mucosæ and glandular layer; (e) sub-mucosa, infiltrated and œdematous; (f) blood vessels surrounded by leucocytes; (g) muscularis mucosæ.



In neutral bouillon, a general marked cloudiness appeared in twenty-four hours, together with the formation of a thick grayish surface membrane. In forty-eight hours there was a large precipitate. No clearing of the fluid occurred. A bluish green color was apparent, but never became deep. The bouillon became very alkaline. The odor of all the cultures was clearly suggestive of arbutus.

On potato the growth spread rapidly, was moist and grayish red; the entire potato became a bright green—later turning dark and faded looking.

The bacillus was motile, straight, short, two to four times as long as wide, with rounded ends, not clubbed. No long threads were seen in any culture—but chains of two or three did occur. It stained well with methyl blue, and also by Gram's method. One cm. of a pure bouillon culture, forty-eight hours old, was injected intra-peritoneally into a medium sized rabbit. In less than twenty-four hours the animal was found dead. Examination showed a recent, thin, fibrino-purulent peritonitis, involving chiefly the abdominal wall, and a few intestinal coils only. The abdominal wall over an area extending about one and one-half inches on all sides from the point of injection, was swollen to three-quarters of an inch in thickness, the tissues being œdematous to a very marked degree. No hemorrhage occurred at this point. Slips from the œdematous fluid showed many bacilli—no other bacteria. Stomach mucous membrane was deeply congested, all the coats of the small intestines also. Cultures from heart's blood, liver, spleen, lungs, kidneys and peritoneal exudate were pure of the bacillus pyocyaneus.

Six months later some of the original culture tubes from the child's thigh were found to be alive and virulent.

CASE II.—Lizzie D., one-year old; family history negative; nursed  $2\frac{1}{2}$  months; since then fed on condensed milk, soups, gruels, etc., finally on modified milk, 2-6-1. At ten months of age she weighed  $18\frac{3}{4}$  lbs., and since that time has been losing; stools green, frothy and undigested. On admission (one year old), she measured  $28\frac{1}{4}$  inches in length and weighed 14 lbs., 12 oz.; chest,  $16\frac{1}{2}$  inches; head, 17 inches; eyes, ears, nose and mouth normal; two teeth; skin clear; chest clear; liver one-fourth inch below ribs, which are beaded; spleen not felt.

April 30th. She was put on formula 2-6-2, 6 oz. q. 3h.;



she vomited several times a day, had a dry tongue and green, thin stools.

May 3d. Temperature, 101.2° F.; weight, 13 lbs. 12 oz.; temperature went up irregularly every evening; 103.6° on May 7th.

May 10th. Temperature, 101.4; weight, 14 lbs. 5 oz.; very restless; signs of tetany in both hands; stools better.

May 11th. Temperature, 104.2°; A.M., signs of tetany gone; at 10 P.M., signs of tetany increased; body very rigid.

May 12th. Temperature, 101.8; weight, 13 lbs. 10 oz.; rigidity gone; pupils greatly contracted; respond slowly; stools green.

May 15th. Temperature, 100.6; weight, 13 lbs. 2 oz.; refused food, and gavage begun.

May 20th. Temperature, 100.2; weight, 13 lbs. 2 oz.; vomiting began; stools thin and green.

May 25th. Temperature, 101.6; weight, 11 lbs. 11 oz.; vomiting; refuses food, acts as if in great pain when touched or handled.

May 27th. Lies quietly when not disturbed; tongue and palate covered with thrush; petechial spots on left leg.

May 29th. Died quietly, 2.30 P.M.

*Autopsy.*—Nineteen hours, *post-mortem*.

*Body.*—Extreme emaciation; petechial spots along anterior border of left tibia.

*Brain.*—Examination not allowed.

*Heart.*—Normal in conformation; muscle pale; weight, 1 oz. 2 dr.

*Lungs.*—Recent, fibrinous pleurisy over right apex and over lingula. Acute broncho-pneumonia in right apex, and scattered areas of hemorrhagic broncho-pneumonia in middle and lower lobes. Congestion and œdema intense. Left upper lobe well ærated, except lingula, which is completely solid (area of 1½ by 1 inch), and on section shows an intense broncho-pneumonia with five pin-head to lentil sized purulent foci, which, when emptied of their greenish pus, are found to make a communicating system of tiny cavities. Lower lobe œdematous.

*Lymph nodes.*—Red and swollen; no tubercular foci.

*Liver.*—Fatty and congested; weight, 8½ oz.

*Spleen.*—Slightly enlarged; soft and congested; dark bluish red in color; weight, 6 drachms.

*Supra-renals.*—Normal.

*Kidneys.*—Very pale; right one-half inch longer than left; blurred markings; thickened cortex and adherent capsules.

*Pelvis and Ureters.*—Normal.

*Æsophagus.*—From pharynx to within one-fourth inch above cardiac opening, the mucous membrane is a brilliant red in color, and covered with an adherent grayish yellow pseudo-membrane, as thick as a sheet of filter paper. This peels off in large shreds, showing the mucous membrane beneath studded with tiny round depressions.

*Pharynx, Fauces and Hard Palate.*—Covered with thrush.

*Stomach.*—Cardiac end pale in color, quite normal; pyloric end feels thickened. On opening, a round, purplish red, infiltrated area, one-half inch in diameter, is seen in the posterior wall one-half inch from the pylorus; this is covered with a dirty grayish green, shreddy pseudo-membrane. From this point to the median line, on both the anterior and posterior surfaces, and along greater curvature, the mucous membrane is scarlet in color and studded with pin-head sized ulcers, round, and having a yellow depressed base. There are seventy or eighty of these present, but no larger ones. Adherent, but easily detachable from the mucous membrane is a thick pseudo-membrane, shreds of which extend on to the healthy portions of the stomach wall. No ulcers at cardiac end.

*Intestines.*—Pyloric valve and three-eighths inch of duodenum covered with the same tiny ulcerations. All the rest of the small intestine is absolutely normal; not even congested. In the colon the solitary follicles are large, and much mucus adheres to surface.

*Mesenteric Lymph Nodes.*—Normal in size and consistency.

*Peritoneum.*—Normal everywhere.

*Anatomical Diagnosis.*—Acute pleuro-pneumonia; multiple lung abscesses; acute exudative nephritis; membranous œsophagitis; membranous and ulcerative gastritis; ulcerative duodenitis.

*Microscopical Examination: Æsophagus.*—Upper layers of epithelium entirely destroyed; an irregular granular necrotic mass forms the lining, while the muscularis mucosæ is intensely infiltrated with round cells, but its mass is intact. The sub-mucosa is fully three times its ordinary depth, and the muscular coats are filled with round cells. Baumgarten's stain brings out masses of bacilli in the sub-mucosa, while threads, branching and

anastomosing, make a network running through the mucosa to its membrana propria, but stopping short before the muscularis is reached; many round and oval cells, unquestionably conidia, lie upon and between the mycelia. This was assumed to be the thrush or soor fungus. In those places where the deepest epithelial layers remained, the mycelia did not pierce them.

*Stomach.*—The mucous membrane throughout the entire section took the hematoxylin stain so badly that it was difficult to detect any nuclei. The entire depth of the glandular layer is in a degenerated condition, many glands completely fallen out, others covered for some distance with an adherent fibrinous exudate, containing fragmentary nuclei, fibrine and other granules. Two ulcers extend through the muscularis into the sub-mucosa, which is œdematous, its blood vessels only moderately distended, but surrounded by exuded leucocytes. These last make a granular, irregular base for the ulcer, and run upon its edges to the glandular layer. No solitary follicles present at this point. The muscular coats are much infiltrated, and the peritoneum is distinctly thickened, its outer surface showing no exudation. A number of small veins in the sub-mucosa, muscularis mucosæ, and deepest layer of the mucosa, contain fibrine thrombi, evidently very recent, not adherent to the vessel wall, and staining a brilliant pink with eosine. Those running up between the glands are especially interesting. Bacilli are present in the meshes of the thrombi in large numbers. No hyaline thrombi could be found. Baumgarten's stain shows numberless groups of bacilli, densest in the sub-mucosa, where they literally swarm in its meshes. Around the bases of the glands are groups of bacilli, and in the lumen of some few glands, are single bacilli in small numbers. Some cocci in the uppermost layer of the mucosa and fibrinous exudate; nowhere any threads or cells of soor. Stain for tubercle bacilli, negative.

*Lung, lingula.*—Acute intense broncho-pneumonia with purulent infiltration, and an acute purulent pleurisy. Gram's stain, air vesicles contain myriads of diplococci; in the blood vessels are a few bacilli.

*Kidney.*—Acute exudative nephritis; the exudation consists of leucocytes, red blood cells and plasma; the epithelial lining of the convoluted tubes, collecting tubes and Bowman's capsules are in a state of advanced granular degeneration, many half or entirely peeled off. All the blood vessels, especially the cap-



illary tufts and capillaries about the convoluted tubes are much congested. Connective tissue is cellular, but not increased in amount.

The bacilli were found in the tubular exudate and in the capillaries; no thrombi. The bacilli were also detected in the liver and spleen.

*Bacteriological Examination.*—At the autopsy smears were made from the lungs, œsophagus and stomach.

*Lungs.*—Many encapsulated, lance-shaped diplococci; some short, rounded bacilli, singly and in small groups; no threads.

*Æsophagus.*—Large yeast-like cells, threads which are branching; also groups of cocci and bacilli, which are short and in no way resemble the Klebs-Lœffler bacillus.

*Stomach.*—Cocci in groups; few large oval cells (conidia); many straight, short bacilli whose ends are round, not clubbed.

Cultures from heart's blood, lungs, liver, kidneys and spleen, made on tubes of glycerine agar, and placed in the thermostat. In twenty-four hours a distinct growth was visible in all, moist along needle tract and spreading toward sides of tube, grayish in color, while a green fluorescence became apparent in upper third. On the following day the green color had deepened and spread. Plates were then poured, and bouillon, gelatine, potato and agar tubes inoculated. The only organism found was a short, straight, slender motile bacillus, resembling that of Case I. in every way, except that the color never reached so intensely bluish green a tint; the older cultures were more deeply reddish brown; and no metallic lustre was apparent in the agar tube at any time. The odor of arbutus was very strong. In the lung cultures the bacilli so overgrew the pneumococci that the latter could not be isolated. It is also of interest to note that the soor was nowhere found in the internal organs, either in culture or in section. A culture from the stomach contents contained the bacillus pyocyaneus together with three other varieties of bacteria.

A rabbit injected with  $1\frac{1}{2}$  ccm. of a forty-eight hours' bouillon culture into the vein of the left ear was found dead six hours afterward. The spleen was congested, the intestinal coats as well; no other anatomical lesions. The heart's blood, liver, spleen and kidneys gave pure cultures of the bacillus pyocyaneus, identical with that found in the child.

A white mouse injected with  $\frac{1}{2}$  ccm. of a forty-eight hours'

bouillon culture beneath the root of the tail was found dead in twenty hours. There was a hemorrhagic œdema at the point of injection. Pure cultures of bacillus pyocyaneus were obtained from heart's blood and point of injection. The bacillus from both cases then, was distinctly virulent, but not identical in growth.

While Gessard<sup>25</sup> considers all the variations of this bacillus as races of one species, Ernst<sup>26</sup> emphatically denies this fact, believing the bacillus pyocyaneus pericarditis to be a species distinct from Gessard's bacillus (a) and P. Ernst's (b).

Gastric lesions like the above have been described by a number of writers since Billard's<sup>1</sup> work appeared in 1828, and Cruveilhier<sup>4</sup> published his atlas, 1829-35. The primary diseases in Billard's newly-born cases were encephalitis, pneumonia and enteritis. In but one case was there no other disease. He lays great stress upon the vomiting of a brown fluid (blood). Charcot<sup>5</sup> relates the case of a six and a half months' old fœtus in whose stomach two ulcers were found; the fœtus showing the skin lesions of variola, from which the mother was convalescent. Hecker's<sup>6</sup> case was that of a child who lived twenty hours, its stomach at the pyloric end being honeycombed (*zerfressen*) with ulcers, some extending to the peritoneum. Car-teaux's<sup>7</sup> case also affected a child of twenty hours, born at term, who vomited blood; the stomach contained fluid blood, and on the posterior wall along the greater cul-de-sac were eight or nine ulcers occupying the inner and middle coats. The rest of the stomach and intestines were normal.

Klebs'<sup>8</sup> case is in an older child, four years, who had an aphthous stomatitis, followed by a membranous inflammation of the mouth and pharynx. At the autopsy twenty-one ulcers were found on the posterior wall in the fundus, the largest being near the cardia. Microscopically they were found to involve but half the depth of the glandular layer, and were surrounded by much hemorrhagic infiltration and pigment. Klebs considers the condition due to the swallowing of substances from the mouth, and not to a blood infection.

Nauwerck,<sup>9</sup> in an exhaustive paper (*Mykotisch-Peptisches Magengeschwür*), considers it justifiable to assume as proven that hemorrhagic erosions and ulcers of this nature may and often do go on to the formation of chronic gastric ulcer, thus giving the cases an important practical bearing. He cites the

case of a sixteen year old boy with rheumatism and endocarditis, whose stomach contained a number of hemorrhagic erosions and superficial ulcers varying from microscopic to three millimeters in diameter, and surrounded by much inflammatory infiltration, but no pus. Hyaline thrombi were found in small vessels in the base of the ulcers. The hemorrhagic erosions were found to be due to bacterial necrosis of the mucous membrane, and evidently a mycotic-toxic process carried by the blood. Nauwerck's second case is that of a girl of seven years, dying at the end of the first week of scarlet fever; the stomach showed one ulcer and many punctate hemorrhages, due to streptococci in and outside of the vessels; no hyaline thrombi present. Septic ulcers like this second case are quite common, and have been reported in adults with puerperal fever (Letulle<sup>10</sup>), variola, typhoid, etc. Widal<sup>11</sup> found an acute round perforating ulcer of the stomach in a man who had died of pyæmia due to the staphylococcus pyogenes aureus. Experimentally large round gastric ulcers threatening to perforate the wall have been produced by Letulle<sup>10</sup> in the guinea pig by means of the staphylococcus pyogenes aureus, and also with a bacillus isolated from dysentery stools by Chantemesse. Enriquez and Hallion<sup>12</sup> found hemorrhagic erosions and ulcers in the gastric mucous membrane in dogs and guinea pigs who had been sub-cutaneously inoculated with diphtheria toxin. Both Letulle and Nauwerck lay stress upon the fact that the stomach lesion is not caused by the ingestion of the organisms directly into the stomach (only very rarely according to Letulle), but that the infection is brought to the stomach wall by the blood or lymph current, necrosis occurs, septic destruction of the dead portion follows, and ulcers result, with hemorrhages. Should the patient live long enough, Nauwerck believes that a chronic simple ulcer may develop.

The experiments bearing most directly upon the cases reported above are those of Charrin,<sup>13</sup> who has succeeded in producing gastric lesions, from congestion to hemorrhage and ulceration, in rabbits and guinea pigs inoculated with sterilized cultures of the bacillus pyocyaneus. Multiple hemorrhages are found in such animals, often in the digestive tube, especially in the last part of the ileum and in the cœcum; more rarely in the stomach, and most rarely in the colon and rectum. There may be ecchymoses or sub-mucous infiltration involving the Peyer's patches, or superficial ulcers, which, in the stomach, are multiple losses



of substance—ulcerations—and not simple gastric ulcer. Finally there may be blood in the alimentary canal, and hemorrhages in other organs. A picture of the stomach from one of Charrin's dogs, showing multiple ulcerations, appears in the first volume of the *Traité de Médecine*, by Charcot, Brissard and Bouchard.<sup>14</sup> These gastro-intestinal lesions are but a part of the general pyocyanic infection, *maladie pyocyannique*, studied and described experimentally in animals by Charrin,<sup>15</sup> and proven to occur in human beings by fourteen hitherto reported cases, of which thirteen were fatal and had autopsies performed. Nine of the cases were in children, the eldest being those of Ehlers,<sup>16</sup> brother and sister, who had a gangrenous ecthyma; one of these succumbed, the other recovered. From the contents of the pustular bullæ on the skin the bacillus pyocyaneus was cultivated, pure, during life, and from the blood after death. Neumann<sup>17</sup> reports two cases, one in a girl baby who died when fifteen days old, after having had icterus, petechial spots on the chest and thighs, and vomiting of blood. At the autopsy there was found hyperæmia of the intestinal mucous membrane, blood in the colon, and in the lower part of the œsophagus and pyloric end of stomach, hyperæmia, with numerous ecchymoses. The child had a syphilitic hepatitis. In the blood in the umbilical arteries and heart, pericardiac fluid, lungs and spleen, the bacillus pyocyaneus was found in pure culture. The second case was a child born of a syphilitic mother, and lived but twenty-eight hours; it had a syphilitic hepatitis, was icteric, and the skin showed a number of discolorations. The bacillus pyocyaneus was cultivated from the pleural and peritoneal fluid, spleen, liver and large intestine, together with the staphylococcus pyogenes aureus.

Two cases have been reported by Williams and Cameron,<sup>18</sup> in children of seven and three months old. Both were institution children who did well up to a certain point, then lost, and green diarrhœa began. The elder child had purple papules on the abdomen, later on the chest, thighs and shoulders, with subcutaneous hemorrhages from between the toes and papules on the back and thigh; also epistaxis. There was marked depression, and the legs were flexed and could not be moved without causing pain. A diagnosis of purpura of septic origin was made, and at the autopsy (two months after the onset of the illness), hemorrhagic spots were found in the kidneys, the spleen was firm and the intestinal mucous membrane thickened. The

*bacillus pyocyaneus* was obtained pure from the kidneys and spleen. The younger baby had no purpuric spots at any time, but yellow pustules on the head, and a marked general lividity of the skin. Before death general rigidity developed; double otitis had existed for some time. At the autopsy punctate hemorrhages were found in the stomach and intestines, and pure cultures of the *bacillus pyocyaneus* were obtained from the liver, spleen and kidneys; the blood and urine cultures remained sterile. The authors also cite two other cases in which the *bacillus pyocyaneus* were found with other germs: the *staphylococcus pyogenes citreus* in pustules the contents of which were brown in color, and in which case no autopsy was performed; the intestinal bacteria in the cœcum, cultures from all the organs remaining sterile.

Leaving out then, these and Neumann's second case, also one of mixed infection, and including one case of Kossel's,<sup>27</sup> six weeks old, and two reported by Manicatide,<sup>28</sup> we find, in all, ten cases of general infection by the *bacillus pyocyaneus* alone in pediatric literature. Analyzing the clinical symptoms, we find certain features common to all, while a striking resemblance exists between the elder case of Williams and Cameron and the elder (Case II.) reported in this paper. Thus hemorrhagic purpuric spots on the skin were present in all save one case, the younger of Williams and Cameron; larger sub-cutaneous hemorrhages occurred in two, epistaxis in one, and hematemesis in one; Diarrhœa is noted in six; green stools in four; great prostrations was present in six. As for the nervous symptoms, Ehlers reports spasmodic rigidity of the extremities in both his cases. Williams and Cameron speak of the firmly flexed legs in one, and general rigidity in their other case, while one of my own cases had signs of tetany in both hands, and general rigidity lasting several days. Paralysis has been observed by Charrin in rabbits, occurring not immediately after the inoculation, but after an incubation period of fifteen days to two months. (The rigidity appeared late in the course of the disease in these children.) While the posterior extremities were affected first, oftener both than one alone, the anterior may also be involved, though rarely. When at its height, the paralysis is spasmodic in nature. In very acute cases convulsions have been observed, and somnolence is the rule.

The temperature is given as high in five cases, and ran a

very irregular course in both of mine. As for the duration of the disease, we find Ehlers' and Neumann's cases running an acute course in fifteen days, while one of mine lasted six weeks; the other, like one of Williams and Cameron, two months.

It would seem that the existence of general pyocyanic infection as a clinical entity is an established fact, and that these two cases, like those of Williams and Cameron "are examples of that rare condition of pyocyanic disease, or cyano-pyæmia." How closely it is related to melæna in the newly-born and to purpura in later life, further experimental and clinical studies must decide.

The mode of entrance of the infection is rather an interesting point. Thus Legars<sup>19</sup> summarizes the cases as follows: those following a skin lesion, and those following the lesion of a mucous membrane, either intestinal or bronchial; another mode of entrance has been pointed out by Williams and Cameron, namely, the auditory canal, and they thought it likely that their second case was so caused. Blaxall<sup>20</sup> has found the bacillus pyocyaneus in one of fourteen cases of otitis media examined, together with the streptococcus. Kossel<sup>21</sup> found it in one of thirty-eight cases studied, the child having an intense gastro-enteritis, with very green stools, containing great numbers of the bacillus pyocyaneus.

Karlinsky's<sup>22</sup> case, an adult, illustrates the cutaneous entrance, the lesion being a phlegmon on the left forearm. The extensive skin lesions on the thigh of Case I. must, of course, be looked upon as the result, and not the cause of the general infection, as proven by its late appearance (day before death), and the fact that no abrasion existed at any point; nor was there evidence of suppuration.

Monnier's<sup>23</sup> case is quoted by Legars<sup>20</sup> as illustrating the entrance by the bronchial mucous membrane. It was that of a man who had a broncho-pneumonia, pleurisy and endocarditis, all containing the bacillus pyocyaneus.

Finally there are cases in which it is quite impossible to discover the point of entrance with any positiveness. My cases belong to this category—for the lung lesions were recent in both, and undoubtedly due to a pneumococcus infection; no point of older lesions being found. Both cases began with intestinal symptoms, and in both the intestines showed, in addition to the recent ulcerative and membranous lesions, those of older lymph-



oid enlargements, as though the early catarrhal symptoms had created a suitable nidus for the entrance and growth of the bacterium causing the general infection.

It is worth noting that while bacteriological examinations of autopsies have been made in sixty-two cases during the past year, the bacillus pyocyaneus was met with but twice, in the cases reported here. To say positively that the bacillus pyocyaneus caused the gastric ulcers would be unjustifiable, but its presence in these two cases is certainly an intensely interesting and significant fact, worthy of careful consideration in future cases.

I desire to thank Dr. L. Emmett Holt for his unfailing courtesy in placing the histories of the Babies' Hospital at my service, and also for the use of the photograph of the gross specimen.

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**Cumston, Charles Green : A Study of the Virulence of the Bacterium Coli in Infantile Diarrhœa.** (*The International Medical Magazine*, 1897. Vol. vi. No. 2.)

After a most extensive and scientific series of observations upon the action of the bacterium coli, the author reaches the following conclusions:

1. The bacterium coli appears to be the pathogenic agent of the greater number of summer infantile diarrhœas.
2. This organism is the more often associated with the streptococcus pyogenes.
3. The virulence, more considerable than in the intestine of a healthy child, is almost always in direct relation to the condition of the child at the time the culture is taken, and does not appear to be proportional to the ulterior gravity of the case.
4. The mobility of the bacterium coli is in general proportional to its virulence. The jumping movement, nevertheless, does not correspond to an exalted virulence in comparison with the cases in which the mobility was very considerable without presenting these jumping movements.
5. The virulence of the bacterium coli found in the blood and other organs is identical to that of the bacterium coli taken from the intestine of the same individual.

## Clinical Memoranda.

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### OPERATION FOR STRANGULATED HERNIA IN A CHILD AGED LESS THAN THREE MONTHS.\*

BY J. GARLAND SHERRILL, M.D.,

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of Medicine, Louisville, Ky.

The child before you was operated upon for strangulated inguinal hernia on April 30, 1897. The hernia was on the right side, and had been strangulated for eight hours when I saw the case. The child lacked nine days of being three months old when operated upon. According to the history obtained, the hernia appeared about two weeks previous to the time of the operation.

I was called to see the case by the family physician, who had used all the ordinary measures to reduce the hernia without success, and under chloroform I attempted for fifteen minutes, by means of taxis, to reduce it. Failing in this I made an incision about one and one-half inches in length down to the sac, which was then opened, and with considerable effort I succeeded in inserting the tip of my little finger into the ring. Enlarging my incision slightly I liberated the gut, which was very dark in color, two or three spots being almost black, but believing it to be viable I replaced it and attempted to obtain a radical cure by approximating the pillars of the ring with fine catgut. No effort was made to do a Bassini operation because the child was very feeble. The external wound was closed with a continued catgut suture. The little patient recovered from the operation in the course of ten days without any trouble whatever. I am not sure that a perfect cure will be affected, but think with the aid of a properly applied pad, a good result will be obtained.

Dr. Dowd recently reported in the ARCHIVES OF PEDIATRICS a case of strangulated hernia in a child four months old, strangulation having lasted for six hours, which was operated upon by the Bassini method, with recovery. The child before us was less than three months old, and strangulation had existed eight hours when operated upon.

Dr. W. O. Roberts, in remarking upon the case, said that he

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\* Reported to the Louisville Surgical Society.



could recall but one case coming under his observation in one so young. That was a patient of Drs. Vance and Cecil, the child being two months old. The contents of the hernia in that case were composed entirely of the cæcum. When he reached the case the cæcum was exposed by an incision and fæcal matter was oozing through several little crevices, so to speak, in the walls of the gut. No aspirator had been used. The external opening was enlarged, so as to admit two fingers without difficulty. After the contents of the hernia was reduced, the sac was tied off, and the opening closed. The child made a good recovery. It seemed to the speaker that this child was cured of the hernia, and he did not see any necessity in further use of a truss or pad. He believed that the truss for children of this age which met the requirements better than any other, was one devised by Dr. A. M. Vance, of Louisville, made of canton flannel.

Dr. Jas. S. Chenoweth said that he had recently seen a strangulated hernia in an adult retract under a spray of chloride of ethyl.

Dr. L. S. McMurtry thought that nothing was to be accomplished from a pad or truss.

Dr. W. L. Rodman recalled the fact that many of the older authors denied the possibility of strangulated hernia in infants, yet there were now a sufficient number of cases on record to show that they were false in their teachings. The youngest case he had operated upon was seventeen months old, the Bassini method being employed, with a perfect recovery.

Dr. W. C. Dugan said that this was the youngest case of strangulated hernia that he had seen. He had operated upon one child aged four months for strangulated hernia, doing the Bassini operation, which was followed by a perfect result. Strangulation was only of four hours' duration.

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**The Treatment of Anæmia.**—The following method is one of the most efficient at our command for the treatment of anæmia or chlorosis. Take of ferratin, 15 grams; natr. bicarbon., 9 grams; sacch. alb., 15 grams. Divide into thirty powders. Administer a powder three times daily in a glass of sweetened water. This is designed for children over fifteen years of age. The dose for children between five and fifteen years is half this amount and one quarter the amount for children under five years. An overdose causes no harm, for about twenty per cent. of ferratin is absorbed and the balance is excreted, without deranging the stomach or causing constipation.

# ARCHIVES OF PEDIATRICS.

DEVOTED TO THE

DISEASES OF INFANTS AND CHILDREN.

OCTOBER, 1897.

Edited by FLOYD M. CRANDALL, M.D.,

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## THE STRAWBERRY TONGUE IN SCARLET FEVER.

Few medical students leave college without being strongly impressed with the importance of the strawberry tongue in scarlet fever. It is one of the things which seems to make a vivid impression on the mind. It is something tangible, and the young medical man is on the lookout for it. He soon sees a tongue that impresses him with its similarity to the strawberry, and if fever is present, with an air of more or less certainty, he makes a diagnosis of scarlet fever. After one or two errors, he looks up the authorities on the subject and promptly finds that the doctors disagree upon the fundamental principles of what strawberry tongue really is. One author describes it as a white coated tongue, showing prominent red papillæ, while another says that it is a rough red tongue presenting dark red papillæ. These two conditions are very different, so different in fact, that they cannot be diagnostic of the same pathological condition.

In a recent number of the *University Medical Magazine*, Dr. H. M. Fussell has attempted to solve the vexed problem of what a strawberry tongue really is. He accepted, when he began practice, he says, the following description by Flint: "The tongue early in the disease is generally coated. While the coating remains, frequently the papillæ projecting through it have the appearance of numerous red points; the surface of the

tongue looks as if cayenne pepper or red sand had been sprinkled over it. This is seen in other affections. Another appearance is quite distinctive of scarlet fever. In the progress of the disease, the coating exfoliates, leaving the surface of the tongue clean and reddened; and the papillæ being enlarged, the appearance is strikingly like that of a ripe strawberry. The strawberry-like tongue is a pathognomonic symptom; it is peculiar to this disease. It is often but not uniformly present."

He became confused by subsequent reading, and began an investigation of the subject. He quotes the description given of the strawberry tongue by twenty or more authorities, English, French, German, and American. With the exception of certain American authors, some of them indeed being of great weight, the consensus of opinion seems to be that the term should be applied, not to the white coated tongue, frequently seen in the first stage of scarlet fever, but to the red, rough tongue commonly seen on or after the fourth day, the papillæ being dark red in color.

There are two facts worthy of consideration: A white tongue with red papillæ is seen in numerous conditions and is not confined to scarlet fever; the strawberry is not a white fruit with red seeds, but a dark red fruit with a rough surface. It is unwise, therefore, to apply the name of *strawberry* to a white tongue, and still more unwise to lay stress on such a tongue as a symptom of importance in making a diagnosis of scarlet fever.

Most observers will agree with the statements of Dr. Fussell that in the first three or four days of illness from scarlet fever, the tongue is white coated, with the papillæ prominent, sticking out through the white fur. After the fourth day this coating disappears, sometimes gradually, sometimes quickly, leaving the tongue a bright, shiny red, with very prominent red papillæ. They will no doubt, also agree that the first condition, while common in scarlet fever, does occur in many febrile conditions, especially when there is irritation of the digestive tract; and that the more or less sudden desquamation of the tongue leaving



it bright, red, rough, with prominent papillæ does not occur in any other disease than in scarlet fever, and is therefore characteristic of that disease.

It certainly seems that the term should properly be applied to the bright, red, clean tongue with prominent papillæ which follows a coated tongue, the papillæ of which may have been prominent and red.

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### THE EMOTIONS IN INFANCY.

The various emotions do not develop in infants uniformly, nor do they all appear at the same time. Surprise and curiosity are noticed very early. Anger certainly develops at an early period, but its manifestations are so similar to those of pain that it is impossible always to say when the emotion first appears. Active love appears later than either of these emotions. Sympathy during infancy and frequently during early childhood is very slight or entirely lacking. Prof. Tracy assigns two reasons for this. The first is that the child's life is so full of his own personal needs that he can pay but little attention to those of others; the second, that he is as yet unable to comprehend feeling in others, because of his own limited experience. Sympathy is unquestionably an emotion which grows with increasing experience, and there is truth in the common belief that it is those who have suffered who can best sympathize with the suffering of others.

The average child is certainly selfish and egotistical. This is so almost of necessity. For the reasons already mentioned, the idea of self is greatly exaggerated. It is only as the imagination is developed that he can place others in the position of self and appreciate their feelings.

The proprietary instinct is developed early in most children, for the necessities of play engender the necessity of the possession of playthings. The instinct of property in turn gives rise to the instinct of jealousy. "Jealousy depends in general on the temperament," says Parez, "and is often the index of a keen sensi-

bility, though showing itself also in children of a calm disposition. It is easily confounded with envy, desire, wish to possess, and the need of being noticed. It opens the way for hatred, falsehood and dissimulation; in certain feeble natures it leads to discouragement."

Jealousy is one of the most powerful of the emotions, and is potent for good as well as for evil. It is universally present, though in some natures it seems to be latent. It is very rare, however, that it cannot be aroused by proper stimulus. Tracy thus speaks of the emotion with great wisdom: "The jealousies of children need careful treatment. They are often augmented and rendered morbid by injudicious conduct and thoughtless words of praise and blame on the part of grown-up people. Carefully treated, this feeling may be developed into self respect on the one hand, and a proper altruism, or 'jealousy for others,' on the other, and thus contribute much to the child's moral education."

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#### A BETTER MILK SUPPLY FOR CITIES.

The agitation for the securing of a better milk supply for cities is rapidly bearing fruit. One of the last cities to institute a system of *certified milk* is Rochester. This good work has been undertaken by the Health Department and is already accomplishing admirable results. The department is not only attempting to furnish good milk, but has taken measures to distribute it at cost price, so that it may be available to the poor who require such milk most. A full account of the measures adopted will be given in the next number of the ARCHIVES. The same number will also contain papers describing the steps taken in New York, Newark, Yonkers and Buffalo to improve their milk supply, together with articles by Drs. Holt and Rotch on the importance of milk as a food for infants and its proper modification. The series promises to be one of the utmost value, for it demonstrates that the idea of securing pure and wholesome milk in cities is no longer a theory, but a well established fact.

## Current Literature.

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### HYGIENE AND THERAPEUTICS.

**Spratling, William P. :** **The Moral Treatment of Epilepsy.**  
(*State Hospitals Bulletin*, New York. 1897. Vol. ii. No. 1.)

The author, whose great experience with epileps says medical superintendent of the Craig Colony, renders him an authority worthy of the most careful reading believes that in no other disease to which human flesh is heir, will the application and continuous enforcement of the factors that constitute moral treatment produce such valuable and far-reaching results, as in epilepsy; and under no other than the colony system in the care and treatment of this great class of defectives, can the factors that make in the aggregate its moral treatment be attained.

He uses the word moral in this connection in its broadest possible scope of application, and would have it include the ethical principles that underlie the science of right, and right conduct and character.

As yet, we are ignorant of the material conditions that epileptic phenomena imply. That damaging changes, temporary or prolonged, varying in severity, take place in the more highly specialized tissues of the economy with the occurrence of every seizure, is a fact beyond dispute. Such changes vary in every possible degree, from simple molecular disarrangement that gives rise to perverted functional action for a brief period of time only, to fixed and lasting pathological changes that produce permanent morbid action.

The mental infirmities of epileptics, as manifested in irritability of temper, irrational conduct, inconstancy, tendency to the commission of acts of violence, and general disregard for the laws of health, order, and society, to say nothing of the graver states of mental disorder to which the disease predisposes them, point clearly and unmistakably to disease of the brain.

Every epileptic is at times an irresponsible agent; upon his field of consciousness and mental integrity there is a blot. It may be small and of the most transitory duration, and so dim in outline as to appear as the faintest shadow, but it is there; it has a vital hold upon his life, and dominates in varying degrees his habits and acts.

In studying epilepsy we see and study symptoms only. Of



the minute and intricate mechanism involved in the production of epileptic phenomena—we have, as yet, no knowledge. We are steadily acquiring greater knowledge of brain centres; we are studying more closely the aura, or warning, that so often appears to indicate the coming seizure; we are paying more attention to auto-toxis, in all its forms; to irritants of all kinds, intrinsic and extrinsic, the action of which possibly serve to disturb the equilibrium of the nervous system; but we have not as yet constructed or discovered an acceptable basis on which to found a logical theory as to the cause or causes of epileptic phenomena.

The explosive theory, *per se*, as far as it goes is all very well and plausible, but its fatal fault lies in the fact that it deals with the manner in which the fit is produced, and not with the causes that underlie the conditions that make the manner.

If epilepsy has, or is based upon, a single essential condition, the author's conception of it is, that it *consists in a periodic liberation of dissipated energy, that tends to perform no preconceived physiological act.* This is purposely verbose, to explain fully the meaning of his conception. In the concrete, two words will suffice to express it—*dissipated energy.* All other conditions or symptoms that follow this, not excepting the chief attendant one of disturbed consciousness, are of secondary importance.

The object first to be attained in the moral treatment of the epileptic, is to place him under such environment as renders it most difficult for him to gratify the unhealthy cravings of morbid and capricious tastes and desires. It is not possible to make his environment such that he will be absolutely debarred from indulgences that are not good for him; without, at the same time, robbing him of that broad and consistent amount of freedom, and active outdoor life and exercise that has such paramount value for him. It is practically impossible to throw such environments around the epileptic in his own home. Sentiments, stronger and more active than good judgment on the part of the parent for the child, invariably creep in to defeat the very objects we are trying to attain.

In his home the epileptic is humored and pampered; permitted to eat whatever he chooses; obey or disobey regulations for his welfare, as his fancy dictates; is praised for his minor virtues, however feebly exposed, and pitied for his largely controllable shortcomings, and in time becomes, through the natural

and unrestricted promptings of his disease, an irritable, fault-finding, intractable, and ungovernable child. Household sympathy creates the worst form of mistaken policy on the part of the parent for the welfare of the child.

All epileptics cannot be included in this category, but that it is the condition of the great majority of them, any person who has had much experience with them will testify.

But back of the improper and faulty moulding of his habits and character during his early home life, he bears a graver handicap bestowed upon him as a heritage. Congenital deficiencies, in his physical and mental constitution, find in him a fruitful field for expression, or by virtue of having pursued him through some generations, they have made him so. The more deeply he is touched by these influences, the less of a free and responsible moral agent he is and the greater the need for continuous supervision over him.

The colony system embraces the features *par excellence* for the moral treatment of the epileptic. Here he is obliged to enter upon a systematic and routine life, with enough diversion and freedom of movement and recreation to promote physical development, and for the pursuit and acquirement of such mental accomplishments as he is capable of receiving. He must take his meals at a regular hour; he cannot have food that is not good for him, for the reason that such food is not prepared; he must eat in a manner that conduces to good digestion and not constantly gourmandize, as is his wont; he is made to employ his energies in the prosecution of some given task, varying his work from time to time, as his condition may seem to require.

Exercise causes more blood laden with nutritive elements to flow to the cells. Likewise the debris, which under such conditions is more rapidly produced, is more rapidly carried away. The exercise of muscle and brain for the epileptic is of especial value. Nearly all of his kind suffer from a lack of coördination of the finer muscle movements, and his sensory apparatus is notoriously liable to suffer mal-adjustment.

The colony system provides means for the accomplishment of all these things. Through diversified industries, systematically and faithfully prosecuted, he can acquire a good appetite, a good digestion, a good muscular system, a better brain, a broader scope of mental horizon, and through the regulated and properly adjusted agencies of school life, a fair degree of technical knowl-

edge, that he can apply when the exercise of mental power is called for.

But even here these things are not easy of accomplishment, and only by the application of the principles involved, when falling rain-drops wear a stone away, can they be realized.

**Gellhorn: A Contribution to the Therapeutics of Iron.**  
(*Therapeutische Monatshefte.* 1897.)

The skeptical assertions of Dr. Bunge, regarding the value of ferruginous medication, at the Congress for Internal Medicine of 1895, evoked an almost unanimous and vigorous opposition in the discussion which followed the reading of his paper. The doubts expressed by him in reference to an insufficient absorption of the inorganic preparations of iron could at that time only be controverted, in the main, by the results of practical experience derived from the administration of iron. However, Quincke even then pointed out that his investigations on the subject, which had not yet been concluded, had demonstrated the absorption of iron preparations given for medicinal purposes, and their utilization in the body. In 1896, at the Congress for Internal Medicine, Quincke reported the results of his experiments, which meanwhile had been completed, and which confirmed in every respect the above-mentioned statement. He had made it his aim to trace the course of iron along the intestinal canal by means of micro-chemical reactions, and for this purpose fed white mice for a number of days with cheese, to which had been added various ferruginous preparations. The animals were killed during feeding, or after the lapse of a certain interval, and the viscera, especially the intestinal canal, hardened in alcohol, cut open and examined for the presence of iron with sulphide of ammonium as a reagent. It was thus found that iron is absorbed exclusively in the duodenum, and this applies both to the iron in the food and that administered medicinally. It was detected in the duodenal epithelium and in the stroma of the villi, and is visible even to the naked eye. Furthermore, iron is found deposited especially in the liver cells, in a form perceptible on microscopical examination, and in rare cases could be detected by microscopical means in the cortical tubules of the kidneys.

These investigations of Quincke have demonstrated incontestably that the favorable results which have been obtained, since olden times, from the administration of iron are actually attrib-



utable to its absorption, and not, as Bunge would have it, to accidental circumstances, to diet alone, or even suggestion. Control experiments in this direction with indifferent medicaments are readily carried out, and were repeatedly mentioned at the Congress of 1895. It should be added that these control experiments were followed by no change, or only by a transient improvement in the condition of the patient.

At the last Congress for Internal Medicine, the subject of the therapeutics of iron was so thoroughly ventilated by the foremost clinicians, as well as by numerous physicians in late years, that a new contribution would appear superfluous. This subject, however, is of such importance to the general practitioner that a cumulation of material is necessary in order to eliminate the least doubt as to the efficacy of a therapeutic measure which, originating at first on the basis of speculation, and later supported by the results of empirical observations, has finally been demonstrated to be of value by exact experimentation.

The author then discusses the clinical aspects of this question. The patients, who belonged for the most part to the working classes, give in the main the same group of symptoms: amenorrhœa, scanty or profuse, weakening, irregular, usually premature, menses; headache, anorexia and dyspepsia; neuralgias, and almost invariably marked lassitude, which interferes markedly with their ability to work. In these cases prompt and radical help must be afforded, in order to restore to the patients their full working capacity as soon as possible. It is well-known that the therapeutic value of the various iron preparations differs greatly. This is shown *a priori* by the abundance of manufactured products of this kind. The author used chiefly three preparations; pilulæ chinini cum ferro, formula magistralis of Berlin, liquor ferri albuminati, and the neutral peptomangan (Gude). He reports his results with the first of these three remedies as very indifferent, while with the liquor ferri albuminati of the pharmacopia they were somewhat better. He instituted accurate examinations with only Gude's peptomangan, and the data given relate to this remedy alone. Owing to his limited experience with the many other preparations employed by the various authors, he does not designate the peptomangan as a universal remedy, or as the only efficient preparation.

There can be no doubt that our medical intervention, no matter of what kind, is materially assisted by psychical impres-

sions. This applies especially to female patients, who are extremely susceptible to mental influences of this character. Hence, it may readily occur at the commencement of treatment that the previous disorders are less strongly felt, and it is therefore unfortunate that an objective criterion for the existing improvement is not at our disposal, as such we would regard regular examinations of the quantity of hæmoglobin in the blood. In the observations reported these were made with Gower's hæmoglobinometer. This instrument is very convenient, and is superior to Fleischl's apparatus for the use of the general practitioner, especially on account of its cheaper cost. The tests are very exact; any existing errors are the less to be considered since they occur uniformly and in about the same degree during the entire course of the experiments.

That dietetic treatment alone may be successful in anæmic and chlorotic patients was laid down as a dictum by Immermann and Reinert at the Congress for Internal Medicine of 1895. It is natural to suppose that poor and ill-nourished persons would gain in strength under the influence of a proper and invigorating diet; nevertheless, after eight to fourteen days a cessation in the improvement occurs and old disorders return. These authors, as well as Nothnagel and Ziemssen, consider an invigorating diet as only a valuable adjunct; both of the latter, moreover, regard rest in bed for several weeks as an important factor in the cure. For several years Mackenrodt has, also, carried on a series of observations of this kind, not yet published, in which, for purposes of control, he employed quantitative estimation of the hæmoglobin. It was found by him that under the influence of hygienic and dietetic regulations alone the quantity of hæmoglobin in the blood increased only at the commencement of treatment, and then only in a dilatory manner.

In the case of one of the patients, the author proceeded as follows: He prescribed peptomangan, one teaspoonful three times daily after meals, and regulated the diet. Sour and fatty foods, as well as raw fruits, were to be avoided under all circumstances. Fritsch advises, indeed, that the desire for acids manifested by chlorotics should be gratified. According to the author's experience, however, this craving for acids is to be regarded as a pathological condition of the alimentary tract, which is made worse by further supply of acids, but can be successfully overcome by an unstimulating diet. In cases where the social

conditions in any way permitted, he allowed the patient to take a small glass of red wine three times daily, but never during a period of one hour before and after the administration of the medicament, in order to prevent the combination of the tannic acid contained in the wine with the iron. The use of potatoes was restricted as much as possible, at least, during the first four weeks. When, as so often happens, obstinate constipation was present, the author followed the suggestions of Hebra, which have recently been again advocated by Ruge, and obtained generally, excellent results. In contrast to several authors who made it a practice to remove any existing dyspepsia before resorting to the use of iron, he followed the method of Ziemssen and Baumler, of at once administering iron—unless the presence of a severe gastric affection, especially ulcer of the stomach, could be positively determined—and observed as early as the end of one or two weeks, an increase of appetite and subsidence of the gastric disorder.

The author lays especial stress upon systematic exercise in the open air. He ordered the patients, who, with but two exceptions, were treated out of bed, to take a stroll at midday, at first from five to ten minutes' duration. At the end of three or four days they were allowed to remain outdoors for five to ten minutes longer.

In this manner he treated about sixty patients. In twenty-four cases he instituted quantitative estimations of hæmoglobin at regular intervals of three, five, or eight days. Under normal conditions the quantity of hæmoglobin in woman amounts to 12.59 per cent. when estimated in comparison with the other constituents of the blood. Among these cases the lowest amount met with was, in a single instance, 30 per cent. of the normal. Next to this was a case with 32 per cent. of the normal.

The increase of hæmoglobin in this case was tardy, as in four other cases in which the quantity at the beginning was 34, 35, 37, and 38 per cent. of the normal. Nevertheless it increased to 55 per cent. in twelve days, and to 77 per cent. in less than three months. In eighteen other instances in which the initial amount was higher, *viz.*, 42–75 per cent. of the normal, progress was more rapid as a rule. In one case reported it increased from 45 per cent. on June 2d, to 51 per cent. on June 16th, and 78 per cent. on July 8th.



Favorable results also followed the use of peptomangan, in patients who had been exhausted by protracted hemorrhages. Of course convalescence in such cases is delayed; the system recuperates but slowly from the double injury inflicted by the losses of blood and the operative intervention. Digestive disturbances are especially apt to be troublesome. In these cases ferruginous medication often produces remarkable improvement.

In anæmic neuralgia, also, the author obtained extremely good results from use of the preparation.

That the final estimates did not yield the normal quantity is not surprising, since it is frequently somewhat reduced even in healthy persons. At any rate, the objective and subjective state of the patients in the above cases, as well as in the others not reported in detail, afforded the impression that a radical cure with complete restoration of the ability to work has been effected.

In matters of therapeutics it is always difficult to appreciate correctly the relation of cause and effect, and to eliminate the factor of accidents in estimating the efficiency of any plan of treatment. And in order to arrive at a positive and unbiased decision, it is necessary to resort to a series of observations and control experiments of so great an extent that the single observer, even though he have at his disposal a vast amount of material, is only capable of furnishing a small contribution in the discussion of these questions. Furthermore, a certain amount of latitude must always be allowed to individual judgment.

Yet while fully conscious of these limitations, the author believes that he is justified in asserting that in his therapeutic trials with peptomangan he obtained all that can be rationally demanded, and considers himself warranted in stating that in view of the unquestionable necessity of ferruginous medication in certain troublesome constitutional affections, this preparation acts as a most efficient and useful auxiliary to our therapeutic efforts.

**Morse, Frank L.: Antitoxin Rashes.** (*Annals of Gynecology and Pediatrics.* 1897. Vol. x. No. 7.)

The author reports 249 cases of eruptions following the use of antitoxin in 1972 cases of diphtheria. The rashes seem to depend directly upon the amount of antitoxin injected, children receiving a second and third dose being more commonly affected than those receiving single doses.

If the rash is due to antitoxin there is little or no suffusion of the eyes, no cough, no eruption on the palate, and the initial lesions of this eruption may appear on any part of the body, while in measles the rash appears behind the ears and on the neck and chest and extends downward. If due to antitoxin, it will have disappeared in from twenty-four to forty-eight hours, at which time a measles eruption would be at its height.

The rashes due to antitoxin assume various forms. Cases have been observed in which it resembled an eruption of tinea; others where it had the appearance of rose spots, and in two instances the eruptions have been remarkable on account of their character. In one of these it was a true eczema, involving the greater part of the trunk, and also the head. It persisted for about ten days and then disappeared completely. It was accompanied by scales and crusts, but not by the usual amount of infiltration expected from the extent of the process. The other eruption commenced as a diffuse erythema of various parts of the body, and was quite general in character. It persisted rather longer than usual, but the diagnosis of its being an antitoxin rash was never questioned. As it faded it assumed a marked hemorrhagic type, and over various parts of the body were seen these large black and blue areas as if due to some external violence. They all, however, faded in a few days.

Combinations of these several eruptions have occurred and it is not unusual to observe a macular or papular eruption with a diffuse erythematous blush and sometimes accompanied by an urticaria on the same patient.

A typical erythema multiforme has been observed in a few cases and an erythema or an urticaria have been also observed, localized at the point of the injection of the antitoxin.

The time of the appearance of the antitoxin rashes has been particularly interesting, and also very instructive when a diagnosis is to be made; especially when the rash simulates an eruption of scarlet fever. The earliest cases appear on the second day after the injection, but it is rather unusual to expect any rash until the fourth day, and most of them appear at about the end of the first week or ten days. The latest appearance has been on the twenty-seventh day, as observed in cases staying in the hospital; but one case has occurred when the patient was discharged from the hospital on the sixth day after entrance, but returned three weeks later with an urticaria, and in two

months and three days later with a second well marked urticaria. Second urticariæ may of course appear at any time, but the experience in the hospital shows that they most likely appear at about the end of the second week, between fourteen and twenty days.

The septic rashes of diphtheria are also sometimes seen, but not as frequently as before the days of antitoxin, and are usually present only in those cases which have gone untreated from the outset of the disease and are markedly septic on their admission to the hospital. The rash is usually a diffuse general erythematous blush which appears suddenly, thus resembling an antitoxin erythema, or in exceptional cases it is a coarse punctate eruption too coarse, however, to simulate scarlet fever, and in one case it has been hemorrhagic in character. They can be usually be differentiated from other rashes on account of the profound septic condition which the patient presents. Following the administration of the sulphate of atropine for its stimulating action, it sometimes happens that a flush appears, usually upon the face only, but occasionally extending so as to involve the whole body. It thus may resemble an antitoxin rash, a septic rash or an eruption of scarlet fever, but the history of the administration of the drug is an important matter, and will usually decide whether the rash is or is not due to the use of atropine.

**Paquin, Paul: Further Report of Cases Treated with Anti-Tubercle Serum.** (*Journal of the American Medical Association.* 1897. Vol. xxix. No. 3.)

Several reports have already been made by the author upon the use of anti-tubercle serum. He believes that too much is expected of sero-therapy in tuberculosis, or of any treatment for that matter. It can never be possible to arrest consumption when the tissues are so destroyed and their generative energies so enfeebled that they are beyond the power of stimulation. It is only in the early stages that one may expect the best results. One great trouble we have to deal with is mixed infection, and this can be reached only by the use of antitoxins prepared specially for the germs producing the complications, assisted occasionally by other measures. Tubercle antitoxin cannot act directly against microbic complications. Furthermore it should not be forgotten that the destructive process of tuberculosis is so great, so comprehensive, that no means of wise special or gen-



eral treatment should be spared to assist sero-therapy or any other special treatment in the work of repair. The cases submitted were treated almost exclusively by the use of serum.

The author is fully convinced that no one is warranted to-day in proclaiming the absolute and exclusive curative properties of an exclusive specific alone in tuberculosis of all kinds. Every case must be treated on its merits, considering in each the symptoms, lesions, predispositions, inherited conditions, and the various susceptibilities present. Sero-therapy, he believes, is nature's remedy and offers the greatest assurance of benefit in the subjugation of the specific cause or causes, but in most cases, it should be supported in its splendid work by such hygienic, dietetic, and medicinal measures as are considered wise for each individual case.

In the fall of 1896, the author reported a total of 226 cases. During the treatment of these cases the following conditions obtained:

Effect of serum on fever: 60 subsided, 56 reduced, 26 stationary, 84 not recorded.

Effect of serum on night sweats: 69 subsided, 17 unchanged, 140 not recorded.

Result of serum on weight: 125 increased, 15 unchanged, 27 decreased, 59 not recorded.

Result of serum on strength: 154 increased, 9 unchanged, 24 decreased, 39 not recorded.

Result of serum on appetite: 114 increased, 15 unchanged, 31 decreased, 66 not recorded.

Result of serum on local signs: 40 disappeared, 58 mitigated, 28 unchanged, 100 not recorded.

Result of serum on tub. bacilli: 40 disappeared, 103 reduced, 7 altered, 76 not recorded.

Result of serum on general well being, exclusive of the 40 recoveries: 145 improved, 9 unchanged, 32 not recorded.

Number of recoveries that seemed complete and permanent, 40.

Number of apparent recoveries with existing lesions (cavities) in statu quo, 3.

Number of improved capable of performing usual duties, 41.

Number improved to a lesser degree, 69.

Number of deaths reported, 32.

Number of cases disappeared from observation or under various treatments, 41.

In the present paper the author reports 67 cases treated since those last reported. The results were as follows:

Effect on fever: 17 subsided, 22 reduced, 5 increased, 23 not recorded.

Effect on night sweats: 26 subsided, 4 unchanged, 27 diminished, 10 not recorded.

Effect on weight: 40 increased, 11 unchanged, 4 decreased, 12 not recorded.

Effect on strength: 34 increased, 10 unchanged, 4 decreased, 19 not recorded.

Effect on appetite: 34 increased, 10 unchanged, 4 decreased, 19 not recorded.

Effect on local signs: 17 disappeared, 22 mitigated, 27 not recorded.

Effect on tubercle bacilli: 17 disappeared, 35 reduced, 15 not recorded.

Number of recoveries that seem complete at present, 17.

Number of improvements to a considerable degree, 35.

Improvements to a lesser degree, 11.

Deaths, 4.

**Register, E. C. : The Specific Action of Quinine in Malaria.**  
(*Medical Era.* 1897.)

The author's great experience in the treatment of malaria renders this paper one of particular value. From this experience, which has been both clinical and microscopical, he reaches the following conclusions in reference to the specific action of quinine in the continued forms of malarial fever: A malarial fever without complications will subside after the plasmodia of malaria disappears from the blood; we have in quinine the means to completely eradicate malarial poison from the body; malarial fever occurring in a previously healthy subject, and in the central United States, if at once recognized and properly treated, never ends in death; it is speedily curable, never continues, provided the nature of the disease be recognized and appropriate treatment employed.

The author has made microscopical examinations of the blood of several hundred patients suffering with remittent malarial fever, and has studied closely and thoroughly the crescentic and ring-shaped bodies which he says are the forms of the parasite responsible for the continued types of this fever, and he finds

that the reason quinine does not always effect these irregular forms of the poison, is on account of the usual defects in its administration. He contends that the drug is very imperfectly absorbed when given by the stomach, and when the patient has a temperature of over 102 degrees. He says that in cases of continued malarial fever, if distinct and well marked intermissions of the fever are produced artificially by the use of antipyrene, antifebrine and phenacetine, the crescentic and ring-shaped bodies will disappear after the administration of quinine, as quickly as the spherical bodies that are found in an ordinary case of intermittent fever. In reference to the belief that the forms of the parasite that inhabit the blood cells are not acted on by quinine, he says that there is no doubt in his mind that this belief is not erroneous. Besides his own observations, he has been able to collect the opinions of thirty-two authors touching upon this point, and twenty-eight out of the thirty-two believe that the endo-globular or intra-corpuscular forms are not, on this account, the cause of an uncontrollable fever, and that its proximity to the blood cell does not, in any way, protect it from the action of quinine.

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#### SURGERY.

**Morse, J. Lovett : The Non-Operative Treatment of Phimosis in Infancy.** (*Annals of Gynecology and Pediatrics.* 1897. Vol. x. No. 9.)

In the light of the possible consequences of the condition, it seems self-evident that all cases of phimosis should receive early treatment. This treatment should be continued until the prepuce can be easily retracted and the glans kept clean, for in this way only can relief from the local and reflex symptoms be obtained. The three methods for attaining complete retraction of the prepuce are dilatation, incision and circumcision. The advisability of removing the natural protection of the glans penis, unless it is absolutely unavoidable, must be considered as at least questionable. It is unnecessary, except in certain cases of hypertrophic phimosis, and equally satisfactory and lasting results may be obtained from gradual dilatation. By the exercise of a little time and patience, even the tightest strictures may be overcome, as the young tissues are very distensible, and readily adapt themselves to new conditions. Many of the



milder forms may be relieved by simply pulling the foreskin back with the fingers, and breaking down the adhesions, if they exist, with a probe or a director. Even in these cases, however, it is advisable not to complete the procedure at one time, but to do it gradually. In cases in which the phimosis is more marked, the first step is to thoroughly dilate the opening. This may be done by introducing into it the points of ordinary dressing forceps, and allowing them to dilate it by their elasticity. Several sittings, best on successive days, are often necessary to accomplish this.

The prepuce is then gradually retracted over the glans, and the adhesions broken up, as in the milder cases. Care must be taken not to produce a paraphimosis the first few times that the prepuce is completely retracted. The mother then pulls back the foreskin daily for some time in order to prevent possible re-contraction. Cleanliness is, of course, essential both during and after the treatment. Almost all cases of phimosis, except those in which the prepuce is very long, can be satisfactorily treated by this method, and the field for surgical interference is thus restricted to this class of cases alone.

The advantages of gradual dilatation are the attainment of equally as satisfactory results as by more severe methods, the avoidance of a surgical operation, and the retention of the natural protection of the glans penis.

**Campbell, John: Successful Removal of a Cystic Abdominal Tumor from a Child Aged Seven Months.** (*The British Medical Journal.* 1897. No. 1898.)

The patient was a female child seven months of age regarding whom the following history was obtained: The labor was difficult. The child thrived well, and was apparently healthy at the age of three months, but about a month later the mother noticed swelling of the abdomen, which gradually increased. Periodical attacks of violent colicky pain also occurred. The general nutrition at seven months was good. The respirations were shallow and embarrassed. The abdomen was greatly distended by a lobulated tumor, which was more prominent on the left side, and felt hard in its upper half, but soft and fluctuating below. There was dulness on percussion all over the abdomen, except in the right hypochondriac region, which was resonant.

Chloroform was given by Dr. McKinney and a median in-

cision was made from midway between the ensiform process and navel, to midway between the navel and symphysis pubis. This exposed a large tumor lying behind the posterior parietal peritoneum and pushing the intestines into the right hypochondrium. The cystic portion having been tapped, the whole mass was enucleated from the subperitoneal tissue. No bleeding of consequence occurred and no ligatures were needed. The tumor had no pedicle, but was more firmly attached deep in the left side of the pelvis than elsewhere. It lay in front of the left kidney, which was situated at the level of the iliac crest and was freely movable. The peritoneal covering of the tumor was attached to the edges of the lower end of the abdominal wound and the cavity was packed with gauze. The upper end of the wound was closed by two layers of suture, silk being used for the peritoneum and silkworm gut for the skin and aponeurosis. The operation was well borne.

Two hours after operation the child took milk and barley water, and was thenceforward fed regularly every two hours. Fifteen-minim doses of whiskey were given every half hour for the first three hours. On the sixth day the gauze packing was removed, and the bowels acted spontaneously. On the eleventh day the silkworm gut stitches were removed. The wound was then healed, except where the drain had been. At the end of a fortnight the child went home. Three months later the silk stitches began to come away. Five months after operation, the child was in excellent health.

The tumor was composed of a cyst containing about ten ounces of clear yellow fluid, and of a solid portion, in which a mass of cartilage and a piece of bone lay imbedded. It weighed three pounds when fresh. There was nothing to indicate the organ from which it originated.

This appears to be the youngest child from which a cystic abdominal tumor has ever been successfully removed. The only case which approaches it in point of youth is that operated on by Roehmer, of Berlin, in 1883, at the age of twenty months. The present case is, therefore, thirteen months younger than the Berlin one.

**McBride, P.:** *The Prognosis of Laryngeal Adenoids.* (*The Edinburgh Medical Journal.* 1897. Vol. xliii. No. 504.)

The prognosis is in general excellent, in so far that all symptoms of obstruction can be cured by removal of the adenoid

hypertrophy, provided no other cause coexists. It must, however, be remembered that cases of long-continued mouth breathing, the habit of nasal respiration may take some time to acquire. Occasionally a considerable degree of nasal speech seems to persist for a long time, and in some of these cases the soft palate has seemed to us to be unable to shut off the naso-pharynx as completely as it ought. In a certain, although small, proportion of instances, recurrence takes place. Obviously, this will be more likely to happen if the operation has been confined to removal of only a portion of the projecting tissue. In writing of complete and incomplete operations, however, authors seem to us to have overlooked the fact, that in no case can we hope to remove all the lymphoid tissue, and that what is left may grow again with more or less rapidity. A complete operation, then, means removal of all the projecting or pendulous adenoid growth, while in the incomplete form, more or less of this has been left. The author's experience has been that, in earlier cases in which no anæsthetic was used, recurrence of symptoms occurred much more frequently than in later patients, who were operated upon under chloroform. Statistics dealing with recurrence can hardly be relied upon, as many patients may seek advice elsewhere when symptoms reappear.

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#### MEDICINE.

**Inebriety in Infancy.** (*The Quarterly Journal of Inebriety*, 1897. Vol. xix. No. 2.)

A moderate drinker and gourmand married a woman whose ancestors were wine drinkers, she being temperate and well.

The first child, a boy, died of marasmus in infancy. The second child was feeble and anæmic from infancy, manifesting great irritability, crying all the time during its waking hours. One day the nurse gave some wine in sugar, and for the first time the child was quiet. From this wine was given daily, and the child exhibited a radical change of temper and emotions. The physician took to himself the credit in curing the child by wine in a solution of bark. It was found that when this remedy was withdrawn, more extreme symptoms of irritability appeared. On one occasion it was very difficult to procure the remedy, and the child went into a paroxysm of nervous excitement, followed by stupor.

From this time some form of wine and spirits was used constantly. This was continued up to ten years of age, when death followed from some brain affection. This was a veritable case of inebriety from inheritance.



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## Original Communications.

### SARCOMA OF THE CUTIS OF THE NEWLY-BORN.\*

BY A. JACOBI, M.D.,

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New York.

John S., seven months old. Father is thirty-four years of age; mother twenty-nine. They have been married thirteen years, and have four living children, including the patient. They have lost two children. Soon after marriage the mother had a miscarriage at about two months; cause unknown. The first child lived to be two years old, and died in convulsions. The next child is now ten years old, and has always been well. The next died when fourteen months old, during whooping cough. The next three are living and well. The mother is a robust looking woman, who says she has always had good health. Her family history is negative. Father has had a cough for many years, which persists winter and summer, with muco-purulent expectoration. He has been lately accepted by a life insurance company. Mother was well during her pregnancy, and did her own housework. Labor was normal at full term. Baby has been breast fed, and lately has had crackers. Has always been solid and well nourished. Rather constipated, and has been given purgatives from time to time. When he was about one month old the mother noticed a small pink spot at the upper left part of the scrotum anteriorly. This increased in size, rising above the surface of the skin. Gradually it grew larger. After a few weeks a smaller nodule was noticed just below it, which grew in the same way, and a few weeks later a third one below that. As the nodes grew larger they became very bright red. Once an incision had been made into one of the nodes and "blood and water came from it." No portion of the growth was removed for examination. A

\* Read before the American Pediatric Society, Washington, May 4, 1897.

powder was given to the mother, to apply locally, and circumcision was advised. The mother not consenting to this, and as the nodules were growing rapidly, the child was presented in my college clinic on February 4, 1897.

The prepuce was easily retracted. The three little tumors had a bright red color; had a diameter of from one-third to one-half of a centimetre; appeared to penetrate the whole mass of the skin; could be easily lifted up from the subcutaneous tissue. They were not painful. The oldest one showed a superficial depression. It was that one which had been incised. To the left of these three tumors was an area about two centimetres long and one and one-half centimetre wide, which showed some five small nodulations, some of which were similar in color to the larger tumors. These had made their appearance only a few days before the child was presented. In addition to that there were three small red points of the size of the head of a pin, two on the left side, one on the right, on the dorsum of the penis. They also could be easily raised from the underlying tissues. It was noticeable that there was no trace of swelling in the inguinal glands. That is why the diagnosis of sarcoma appeared to be more acceptable than that of lupus.

When the child was again presented on the 11th of February the tumors had grown, the secondary infiltration to the left of them assumed a similar bright color, and an immediate operation was insisted upon. In addition to the symptoms described, there was a red line along the urethra, extending from the insertion of the penis in the scrotum to the end of the prepuce. This had been observed by the mother for the first time that very morning.

The patient was admitted to St. John's Guild Hospital on the 14th, and an immediate operation was performed, in the presence of Drs. Dillon Brown, Fruitnight, Sondern and the house physician. The whole mass was removed without loss of more than a teaspoonful of blood, and easily dissected off from the subcutaneous tissue, which was absolutely normal and not invaded by the pseudoplasm. The small papules on the penis were destroyed by the thermo-cautery, and a bismuth ointment applied. Healing took place without interruption, and even the trace of the thermo-cautery disappeared in a few weeks. The red line, alluded to above, disappeared on the fourth day after the operation.

The microscopic examination of the tumors (Professor T. Mitchell Prudden), shows that they consisted of polyhedral and fusiform cells, closely intermingled with fibrous tissue, and with giant cells scattered here and there. They were still covered with the pavement epithelium of the epidermis. The diagnosis would, therefore, be giant cell sarcoma of the cutis.

Primary sarcoma of the skin is very rare, even in adults. The patients have mostly been from thirty to fifty years of age. It springs from the connective tissues, is circumscribed, has a tendency to grow, it may disintegrate, but no spontaneous recovery has been known to take place. The majority are spindle shaped sarcoma, some reticulated. When extending into the fat they may be softer, and then contain large conglomerates of round cells. Winiwarter says that the papillæ over the tumor may be considerably enlarged. From this remark we have to conclude that all of the cases he refers to are more sarcoma of the subcutaneous tissue than of the skin.

E. Neuhaus published in the *Archiv. für Kinderkrankheiten* of 1897, a paper on congenital sarcoma of the skin. In accordance with the well-known fact, he remarks that sarcoma in the young is quite frequent, and mostly in the kidneys, but that primary multiple sarcoma of the skin is of very rare occurrence. He reports the case of a newly-born baby whose left leg was noticed to be swollen on the fifth day after birth. The tumor was excised in the fifth week and a semi-solid mass of the size of a hen's egg was removed. Many new nodes showed themselves very rapidly. They were of different sizes from that of a pea to that of a walnut or an egg. One below the right clavicle was as large as a pigeon's egg. They became more and more numerous on trunk and extremities. Most of them felt elastic; some of them exhibited the pseudo-fluctuation claimed by me as characteristic of sarcoma in my paper written for the Seventh International Congress at Copenhagen, 1884, on the subject of congenital sarcoma of the kidneys. Some of those tumors were in the skin, some were entirely subcutaneous, most of them could be easily moved over the subcutaneous tissue. On the left thigh one of the tumors ulcerated. The mucous membranes were normal with the exception of the mouth. Inside the mouth on the right cheek there was one small nodule. The lymph nodes were mainly swollen in the inguinal and cervical regions. When the child died there were metastatic



deposits behind the left knee, in the flexors of the legs, in the inguinal glands, in the psoas, iliac, intercostal, pectoral, sternocleido-mastoid muscles, in the retro-peritoneal glands, in the kidney, heart, in the thymus, the jugulum, the right cheek, in the skin of the extremities, over trunk, neck, head and gluteal region. There was also a tumor in the pelvis which gave rise to hydronephrosis. The tibia and fibula were intact. The



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microscopic examination revealed round cells, both small and large. It is noticed particularly that the tumors began in the *subcutaneous tissue*, and it is stated that in consequence of the pressure there was atrophy of the skin and of the rete Malpighii.

The literature of alleged cutaneous sarcoma is only scanty. Some of the following cases are also quoted by Neuhaus:

KAREWSKI (*D. Med. Wochensch.*, 1895, No. ix.), reported a "multiple cutaneous sarcoma in a child of seventeen weeks."

There were multiple tumors, in irregular dissemination, some soft, others firm, of a size from that of a cherry stone to that of a walnut. They were movable *under the skin*. Only two were less movable; one of these appeared to start from the right tibia. The skin was either not changed at all, or was slightly adhering to the tumor. On the biggest one the surface exhibited an angioma. In another place there were cavities filled with blood and surrounded by a tissue mostly formed of round cells (sarcoma). Some of them were lined with endophelia.

RAMDOHR (*Virch. Arch.* Vol. lxxiii., 1878, p. 459), observed the case of a newly-born infant, 43.5 centimetres in length, that died of hemorrhage, "after a short time." Externally there were twenty-two and internally sixteen tumors; many of these in the kidneys. The first tumors appeared on the chin and on the thighs. The former was the largest. The bone was affected, the *epidermis still intact*. It contained round cells with large nuclei, and was in fatty degeneration. It appears the starting point of the multiple degeneration was in the *kidneys*.

AHLFELD'S case, quoted by Neuhaus as one belonging to the class of cases described by him, occurred in a girl of three and one-half years old. It was a congenital fibro-sarcoma of the *vagina*. (*Arch. f. Gynaec.*, Vol. xvi., 1880, p. 135.)

MANDILLON'S case (*Bull. Soc. de Chir.*, 1878, p. 160), was that of a boy four days old. On the right shoulder there was located a tumor as large as an orange, with a circumference of 25 centimetres and a pedicle 1 centimetre high and  $2\frac{1}{2}$  centimetres in diameter. It was movable on the subjacent parts and semi-fluctuating. That is why it was punctured (with no results). It consisted of round and fusiform cells, and some fibres (sarcoma fusiforme), and was in fatty regression. The surface seemed angiomatous, was proven not to be so. Indeed it is stated that the *skin was not affected*.

L. W. MARSHALL (*L. Lancet*, 1878, p. 545), observed in the Child's Hospital of Nottingham, in an infant five months old, a spindle cell sarcoma, which had been noticed when the patient was fourteen days old. It was 4 inches long and  $2\frac{1}{2}$  wide, and contained a cyst filled with blood, 3 inches long and  $1\frac{1}{2}$  wide. It was located between the superficial and the deep *muscles* of the left leg. This left leg had a circumference of  $12\frac{1}{2}$ , the right leg one of  $6\frac{1}{2}$  inches.

The case of Kelbourne King (*L. Lancet*, 1875, p. 766), which has been quoted in connection with our subject, is reported by the author as one, not of sarcoma, but of cancer, in which the skin was healthy; that of Kaulich (*Trager Med. Woch*, 1864), is claimed as colloid cancer.

SENFLEBEN'S case is quoted by Virchow (*D. Krankh. Geschw.*, Vol. ii.). A boy of three weeks had a *navus* on the thigh, which, after having been injured became sarcomatous. This change was very rapid; angiomatous tumors, particularly those

not superficial, and of a mixed—partly angiomatous, partly cellular—tissue have a tendency to become sarcomatous after (sometimes many) years.

WEINLECHNER (*Gerhardt Handb. d. Kinderh.*, Vol. vi., p. 210), observed two cases. A boy of seven months had a fibro-sarcoma of the *subcutaneous tissue* over the scapula. At birth it measured  $1\frac{1}{2}$ , at seven months from 11 to 15 centimetres at its base. The cutis was but little affected, observed when the autopsy was made with the exception of an increase of cells. Another infant, one year old, had at birth a sarcoma of a *parotid gland* and of a *sterno-cleido mastoid muscle*.

Primary sarcomata of the eyelids were observed by Horner (*Gerhardt*, Vol. v., p. 224), in infants and children of from ten months to six years. They are not frequent but more so than in adults, and rise from the *subcutaneous tissue* over which the skin is first movable.

This brief review of the cases hitherto reported in the literature of the subject seems to prove that *not one of them* (Senftleben's case not excepted), *originated in the cutis primarily*, except my own.

In connection with the rare (unique?) occurrence of congenital sarcomatous degeneration of the cutis it is interesting to recall the origin of this tissue. In the formation of the skin (as also of the horny tissues, the glands and the sensory organs), the ectoderm and mesoderm play an active part. At first the whole surface of the embryo is covered with cylindrical epithelium, above which pavement, epithelium (mixed with spindle-shaped forms), is gradually developed. The mass of cylindrical epithelium is the matrix which is soon transformed into the dense embryonal cellular tissue of the cutis (corium). Its elements, which are located below (inside) the cylindrical cells of the epithelial layer, are at first spherical, then become drawn out and separate sufficiently to admit some intermediate substance. The growth of the cutis takes place in an outward direction, and in such a way that the external layer is both younger and softer.

An actual and perceptible differentiation into two layers begins in the primitive dermis during the third month of embryonal life (*Koelliker*, 1879, p. 774, *S. Minot*, "*Human Embryology*," 1892, p. 553). Those two layers are the true dermal (corium) and the subdermal subcutaneous tissue, the tissues being more condensed in the former and more fibrillar in the latter. It is in this that during the latter half of the fourth



month fat cells make their appearance; they increase to such an extent that whitish fat islands are conspicuous to the naked eye by the end of the fifth month. The skin now comprises the epidermis, the dermis (cutis) and the fat layer, below which there is loose connective tissue.

Congenital pseudoplasms are the main supports of Cohnheim's theory, according to which malignant tumors are the results of the proliferation, at some time or another, and sometimes after many years, of embryonal cells not participating in the regular transformation into normal tissues. From the third month the skin is beginning to lose its specific embryonal character; the spherical (mixed with spindle-shaped) elements are then shaped into denser tissues. It is interesting to have to date back the first origin of a cutaneous sarcoma, more or less exclusively composed of cells, to that early period in the life of the embryo.

The description of "congenital sarcoma of the skin" (no histories given or specimens described), furnished by A. v. Winiwarter, in his paper on the surgical diseases of the skin ("*Deutsche Chirurgie*," No. 23, p. 615), does not tally with the subject here discussed. He merely says that congenital sarcomata of the skin are circumscribed, hard, spherical tumors, which are closely *connected with* the cutis, or they are diffuse, doughy, bluish, and prominent with flat surfaces; that they are mostly spindle-shaped, or myxo-sarcomatous. He states distinctly that the *papillæ over the tumor may be considerably enlarged*. There can be no doubt that he speaks of tumors located in the subcutaneous tissue.

Even in the adult of from thirty to fifty years, primary sarcoma of the skin is acknowledged to be very exceptional. (*Arch. f. Dermatologie, etc.*, 1894, Vol. xxvii., p. 163.)

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#### DISCUSSION.

DR. WALTER LESTER CARR.—It is an interesting question as to the origin of these tumors, whether primarily in the skin or in the subcutaneous tissue and secondarily involving the skin. The histories of a number of the cases that have been read leave it doubtful as to the primary origin of the growth. I have special interest in listening to this paper because of the fact that at the meeting of this society in 1893, I reported a case of round celled sarcoma in the skin of the back of a baby aged seven months at the time of operation. The tumor was first noticed when the baby was three months old. I am uncertain as to

whether the origin of the sarcomatous condition was in the underlying structure or in the skin itself. Dr. Freeman made the examination of the specimen and may recall the case enough to give some indication as to where he thought the disease arose. The child is now, four years after the operation, without evidence of any recurrence of the growth.

DR. ROWLAND G. FREEMAN.—I examined two cases about the same time; one removed by Dr. McBurney. Both were sarcomata in the skin and underlying tissue. Whether they originated in the skin or not I do not know.

DR. W. P. NORTHRUP.—I think this paper of Dr. Jacobi's stands out as a distinct contribution of very practical interest. It is a valuable paper for us to have in mind. It cannot have fallen to the lot of many to have observed such a case; I certainly have never seen one.

DR. A. JACOBI.—I think it is very important in all these cases that we should know where the growth originates; whether the skin is primarily the seat or is only secondarily affected. We do not know what it may lead to. Inasmuch as not even the first cause of congenital tumors is settled it may lead to something when we search such cases thoroughly. I think it is of some importance to know whether a sarcoma will originate in the loose fibres of the subcutaneous tissue only or in the dense tissue of the cutis—whether it is possible that it should grow at all in the dense tissue. In all of these cases which I have abstracted for you, of multiple sarcomata of the skin, none of them are cutaneous sarcomata, and we should rigidly exclude them. It is of some consequence to know whether there has ever been a single case of sarcoma of the skin. We do not look for curiosities; what we do want to know is how much can be learned as far as the etiology of malignant tumors is concerned, whence and how they appear when they come. According to my theory and according to the description Minot gives of the development of the skin, the foundation of this tumor must have been laid between the fourth and fifth months of embryonic life.

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**Food Infection.**—Drs. Vaughan and Perkins, in a recent paper in the *Medical News* says that only a few years ago we were seeking for the cause of the summer diarrhœas of infancy in mysterious telluric and meteorologic conditions, but now we know that these diseases are solely due to infected, and consequently poisonous, food. Formerly many cases of food poisoning were supposed to be due to the accidental or criminal addition of some metallic or vegetable poison to the food, and unjust accusation, possibly, in some instances, unjust punishment has resulted. Now we know that not only the symptoms of gastro-intestinal irritant, inorganic poisons, but those of acute exanthemata, and even those of pneumonia, may be closely simulated by the symptoms induced by infected foods.

## TWO CASES OF UNILATERAL TREMOR OCCURRING IN CHILDREN.\*

BY J. P. CROZER GRIFFITH, M.D.,

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Unilateral tremor is a comparatively uncommon affection at any time of life, and the limitation of cases selected to infancy and childhood, of course renders its occurrence still more unusual. Its presence turns one's thoughts to the possibility of a hemiplegia as the cause, since we are taught to look upon tremor of this sort as one of the motor affections of the post-hemiplegic group. Yet although choreiform movements and athetosis seem to be found with reasonable frequency in children, as a result of a lesion of the brain, post-hemiplegic tremor would appear to be much more uncommon. For instance, Gowers (*Diseases of the Nervous System*) makes but a passing reference to it; Sachs (*Nervous Diseases in Children*) does not speak of it at all; Spiller (*Journal of Nervous and Mental Diseases*, January, 1897), in analyzing thirty-three cases of infantile hemiplegia, occurring in the Pennsylvania Training School for Feeble-Minded Children, found no instances of it; and Osler (*Cerebral Paralysis in Children*), in the analysis of 151 cases of cerebral paralysis in children, found unilateral tremor in only one instance, and then confined to one arm; although he found post-hemiplegic chorea twenty-four times and athetosis six times.

With these facts before us the report of the two following cases may be not without interest. The first seems to be an undoubted example of post-hemiplegic tremor. The nature of the second is more obscure.

CASE I.—Samuel C., aged twelve years. His father and mother are living and well. Three other children are living and in good health. He has had measles and probably other diseases of childhood. His general health is good, appetite good, bowels regular. He has been smoking cigarettes freely for the last two years. He is sometimes subject to night terrors; he has no headache. The affection of which he complains has probably been present from infancy, but no exact knowledge can be obtained of the time or mode of onset.

Examination shows the left arm distinctly shorter than the right, but with only slight atrophy. The hand jerk is much in-

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\* Read before the American Pediatric Society, Washington, May 4, 1897.



creased. The hand is generally held partially flexed at the wrist, but there is no resistance to passive movements. There is no affection of gait, no discoverable alteration in the shape or nutrition of the left leg, no ankle clonus. The plantar and patellar reflexes on the left side are increased. Sensation is everywhere normal. The most striking symptom is a rather coarse tremor, which is nearly always present in the left arm, and occasionally in the left foot as well. The hand can be used for many purposes, but the effort to make careful movements increases the tremor to a marked degree. Thus the effort to use a spoon with this hand brings out a characteristic intention tremor, and spills the food from it. If, however, the spoon is empty, the tremor is not nearly so much exaggerated.

The eyes move well in all directions. Examination of them by Dr. A. Thompson reveals nothing abnormal. Electrical examination, by Dr. G. Betton Massey, shows that both muscles and nerves give abnormal response, except for some quantitative diminution in the faradic contractility of the long flexor of the left index finger.

The child was treated by massage and by Swedish movements; also by the administration of bromide of potash, and later of gelsemium, but no improvement was obtained.

The general excellent health and development of this patient, and the long persistence of the symptoms without increase in their severity, indicated that the lesion had been an acute one and had taken place, probably, in early infancy, yet that it was of such a nature that it failed to produce any well-marked, general or special symptoms at the time.

CASE II.—Moore B., aged eighteen months, and an only child. The father and mother are living and well. There is no history to indicate the existence of inherited syphilis. The child was well-developed at birth, breast fed for two months, and continued well nourished and healthy until about August, 1896, when about a year old. He then began to fail slightly in strength, without discoverable reason or definite symptoms. He had learned to crawl and to raise himself upright upon his knees, but by October he began to fail very decidedly in strength, ceased to crawl, lost flesh, seemed weaker all over, and would cry when picked up, as though it gave him pain.

He had been able to say a few words, but now ceased to speak. He seemed unable to sit upright as before, and his back, when in this position, seemed so feeble that a physician who saw him ordered him a leather jacket. A few days before the jacket was ready, tremor began acutely in the left side. It is said to have been as bad and as extensive then as when I first saw him. He was taken about this time to the Infirmary for

Nervous Diseases; whence he was at once referred to the Children's Hospital, which he entered January 28, 1897.

He was examined on the next day, and the following notes made: The child is well nourished and of a healthy appearance, except for slight pallor. He lies comfortably on his back. There is a constant coarse tremor of the head, left arm and fingers, and left leg. This is so strong that it often shakes the right arm also, but investigation shows that the right side of the body is entirely free. There is no twitching or fibrillary tremor of the muscles of the face. There is general flabbiness of the tissues of the body, alike on the two sides. There are no contractures. The heart and lungs are normal. No paralysis of the ocular muscles is to be observed, and no nystagmus. The pupils react well to light. The head shows no signs of rickets. The child turns its head a good deal toward the left, and there is a disposition for saliva to dribble from the left angle of the mouth, yet no alteration of the shape of the mouth can be detected. The child does not smile or laugh, and has not cried during the examination. It has constantly a wondering expression, like that of a very young infant. It says no words, and its cerebration does not seem to be perfect, yet it quickly reaches after objects shown it. The ribs are slightly beaded, but the chest otherwise well formed. There seemed, at first, to be some loss of power in the left arm, the child using the other arm for the most part; but if its right arm be held, it reaches after and grasps objects with its left hand, although waving it about in a somewhat aimless way, as though ataxic.

The child is unable to maintain itself in a sitting position, but after a moment of stillness, falls suddenly in some direction, apparently as much from lack of control as from lack of power. A long, antero-posterior spinal curvature develops when it is made to sit supported. While in this position it can maintain the head erect, but as soon as the body is inclined slightly backward, the head falls in that direction. On standing it on its feet it would at once fall if not supported, yet the knees do not give way. The plantar reflexes are present, but the knee jerks are absent on both sides.

Frequent notes were made of the progress of the case from time to time. The following abstracts give the more important details:

February 1st. The tremor is present at times during sleep. The lower left lip seems to droop a little toward the angle.

February 5th. Both legs are very flabby, especially the left. Knee jerks are still absent. Sensation everywhere seems unimpaired. The child never smiles, and seldom cries. When crying the lines developing in the face are alike on the two sides.

Examination of the eyes by Dr. A. Thompson shows the pupils equal, responding but little to light; both discs gray in the deeper layer; fundus otherwise normal; high myopia; no paralysis of the ocular muscles.

February 18th. The temperature since admission averaged 98-99° until February 9th; then rose by the 10th to 102.6°, and again fell. There has been a very rapid loss of weight and strength. The child takes liquid nourishment fairly well, but seems unable to swallow anything solid; the mother, however, says it never took solid food.

February 24th. The tremor has been very much less, and at times is scarcely noticeable. At the most there is a little shaking of the elbow and of the head. The child has a tendency to hold the elbow flexed and turned outward, and separated from the side, with the hand much pronated and its back turned toward the body. This is only present at times, and there is no rigidity at all when the member is grasped. The child has continued to fail in weight and strength at a startling rate. Its weight on admission, January 28th, was 19 lbs. 1 oz. On February 6th, 16 lbs. 7 oz., and, on February 20th, 15 lbs. It has lost most in its legs, yet it moves these without symptoms of paralysis, although less vigorously than before. It is still able to stand if well supported. The drooping of the lip on the left side has been noticeable on many occasions, but has now disappeared, as has the dribbling of saliva. The temperature has been irregular, and often slightly elevated. The bowels have been rather loose since February 14th, and there has been occasional vomiting. There has been a loose cough, with scattered mucous râles in the lungs. The wondering expression remains, as does the preservation of tactile sensibility.

February 28th. The child is failing rapidly. For some days there has been a tendency to an upward rolling of the eyes, especially toward the left. The tremor has practically disappeared, but there is a nearly constant, slight, jerking movement of the upper arm, as coarse as a choreiform movement, but more rhythmical. There seems to be a little rigidity about the shoulder and elbow on the left side. There is no arm jerk. The flexion of the elbow, and position of the hand, already described, have become slightly more evident. The weight is now 13 lbs., this being a loss of 6 lbs. in a month. The slight, loose cough has persisted, but the examination of the lungs shows nothing new.



The temperature for the last four days has ranged from 100° to 103°. The stools are still too frequent, containing some curds and occasionally a little mucus and streaks of blood.

March 3d. The child was removed by the parents on March 1st. On that day it was so stuporous that it could scarcely be roused; pulse weak and irregular; respiration regular; weakness excessive. Examination at its home to-day shows all tremor and jerking gone. There is still rolling up of the eyes toward the left, and scattered râles in the chest.

March 15th. The condition is practically unchanged. The child lies impassive for the most part, with the eyes often rolled upward. The bowels are generally loose. A few days ago I heard that the child was rather better in general health, without any return of tremor.

The diagnosis of this case seems obscure. The tremor seems undoubtedly to have been of cerebral origin, and would most naturally be considered as post-hemiplegic. Yet there was no evidence of hemiplegia, or, indeed, of any genuine paralysis, and no evidence of rigidity or contractures, with the exception of the slight alteration in the manner of holding the arm referred to. Dr. Morris J. Lewis examined the case with me on February 28th. It seemed to us most probable at the time, that the fever and bronchitis might be the evidence of tuberculous process, and that the nervous symptoms might depend upon a tubercular focus somewhere in the brain. But a closer diagnosis than this we were unable to make, except as a hypothesis without any actual support.

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## DISCUSSION.

DR. T. M. ROTCH.—I have seen a number of cases of this kind, and I think they are of very great interest to the general practitioner and to one who works clinically among children. This class of practitioners is better able to appreciate these cases than is the specialist in nervous diseases. I have seen specialists

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NOTE.—An examination of the child, made early in June, shortly after the meeting of the Pediatric Society, showed a surprising improvement. All nervous symptoms had disappeared. Diarrhœa had ceased, and cough was much less. The child was bright, and seemed well, only in the very decided emaciation and marked pallor. All signs pointed toward an ultimate, complete recovery of health. A later examination in September showed complete recovery. The family state that the tendency to contracture at the elbow joints was one of the last nervous symptoms to disappear.

in nervous diseases work over these cases, considering that they were dealing with some central lesion, as the symptoms might indicate. In a large number, however, the trouble is one of nutrition, and I was not in the least surprised to hear Dr. Griffith say that the child was better, for the tendency is for them to get well and not to die. The cases as they come to me are even in worse condition than Dr. Griffith describes. They are brought usually in consultation from out of town. They are sometimes brought as cases of presumed idiocy, and again, as in the last case which I saw about ten days ago, as cases of probable chorea. From investigating the cases it seems to me that there is no central lesion either of the brain or cord. They are diseases of nutrition, and if the quality of the nutrition is attended to, they will recover. I have seen them where they have absolutely lost the power of sitting up and of speaking (where they had begun to speak) and have assumed the expression of idiocy.

The symptom of tremor is more often bilateral. There is no reason why they should not have unilateral tremor from the same cause. The nervous systems of infants are so sensitive that they can simulate any central nervous lesion. Under proper nutritive treatment the tendency, it seems to me, is to recover. The few cases that I have seen were very valuable to me in general practice, and I believe it should be the work of the members of this Society and of the men working in general medicine, to put the specialist straight in these cases. Over and over again the nervous specialist fails in these cases to make the proper diagnosis.

The emaciation is very great at times. I saw one case last summer of a child which had been very well developed at the age of fourteen or fifteen months. It had begun to say words, and had sat up and stood up. This child became extremely emaciated, lost the power of speech, had lateral curvature and a certain amount of tremor, and looked like an idiotic animal rather than an idiotic human being. It is entirely well to-day. It was a lack of nutrition. Of course we cannot always get at the proper food to cure these cases, but a great deal certainly can be done and a great many lives can be saved by proper treatment.

DR. L. EMMETT HOLT.—My own experience coincides with that of Dr. Rotch in regard to both points: first, the extreme frequency of many nervous symptoms in connection with disturbance of nutrition; second, the disposition of almost all neurologists to look for local lesions instead of general ones. I do not quite recall any cases parallel to those of Dr. Griffith, but many of similar nature which have yielded to treatment addressed to the child's nutrition, and which have gotten entirely well, although to the specialist it seemed certain that there was some organic lesion of the nervous system from which the child could not recover.

DR. ROTCH.—The matter of tremor in general is very interesting. In former times tremor was considered of very grave significance, yet if you take cases of infantile atrophy they show very decided tremor, giving rise to suspicion of abscess of the brain or perhaps in the region of the mastoid. I have seen tremor a number of times in cases of extreme infantile atrophy where the diagnosis was that of disease of the central nervous system.

DR. J. P. CROZER GRIFFITH.—It was on account of the possibility of tremor due to the causes mentioned by Dr. Rotch that I did not entitle my paper "Hemiplegic Tremor," but "Unilateral Tremor." The first case was undoubtedly post-hemiplegic, but the other child had a total absence of increased reflexes and of altered muscle tonus which it is hard to make accord with the presence of so many distinct cerebral symptoms. I have, of course, seen tremor in extreme debility and in the presence of fever. In another case, which Dr. Osler saw with me, there were symptoms of tuberculous meningitis and a very marked tremor, and yet the child recovered entirely. But the child now reported with the strictly unilateral affection, the upward rolling of the eyes always to the left, the tremor limited to one side, and finally the evident contracture of the arm, made me feel that I had to do with some cerebral lesion. I still feel this, and even should recovery take place, it would seem to me no proof that no cerebral lesion had existed, for we know that there can be recovery from quite widespread cerebral disease. It is certain, however, that the case cannot be called "post-hemiplegic," as there was no evidence of paralysis.

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**A Case of Skin-Diphtheria.**—Max Müller (*Berliner klinische Wochenschrift*) reports this rare condition as occurring in a child, two and a half years old, who had been burned with hot water on the side of the face, the neck, the chest, and the abdomen as far as the umbilicus. The burned area healed quite rapidly, and the dressings were removed at the end of one week. At the time that the bandages were taken off, the mother of the child playfully kissed it on the neck. On the next day the mother sickened with diphtheria, and a day or two later the aunt, sister and father were ill with the disease. On the third day, the tender skin on the neck of the child, which had been touched by the mother's lips, showed a white, swollen spot about four centimetres in diameter, bordered by intensely red streaks and surrounded by an œdematous area, which soon spread as far as the right eye. Two injections of serum No. o were given. The skin soon healed, and the child remained free from infection of the throat. This case has several interesting features. The source of infection is positively known and the incubation period can be accurately estimated.—*International Medical Journal.*



# WHERE DOES THE MEDICAL PROFESSION STAND TO-DAY UPON THE QUESTION OF INFANT FEEDING?

BY L. EMMETT HOLT, M.D.,

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It is safe to say that at the present time there is no subject in pediatrics of greater interest and importance than that of infant feeding. It is only within the last decade that this subject has received anything like the attention in medical literature which its practical importance deserves. Until recent years it has been ignored by the physician and left largely to nurses and grandmothers. There are now signs everywhere that infant feeding is becoming a subject of scientific study. During the past few years an extensive literature upon the subject has appeared, particularly in Germany and in America, representing a large amount of clinical observation and laboratory study. It is the purpose of the present article to take a hasty survey of the question as it is regarded to-day.

By infant feeding is usually meant the nourishment, during the first year, of infants who are deprived of the maternal breast. The subject of wet-nursing will not be considered further than to remark that while, in the great majority of cases, wet-nurses are not required, they are sometimes indispensable.

The forms of infant feeding which are practiced to-day may be reduced to three:

1. The exclusive use of commercial foods, or of canned condensed milk.
2. The use of fresh cow's milk with the addition of various foods or substances which are believed to modify the milk so as to increase its digestibility, particularly as regards the casein.
3. The use of only the elements of cow's milk, either with or without some form of sterilization. Cow's milk may be modified by simply diluting with water, or also by the addition of sugar; or more complex changes may be made, such as the various combinations of milk, cream, milk sugar, etc., and these mixtures, or plain or diluted milk may be employed with or without some form of sterilization.

While there are many points which remain to be settled by future study, it is to the third position that the great majority of those have come who are qualified by training and experience

to speak upon this subject. There are in fact few questions in pediatrics upon which such unanimity of opinion exists, as that fresh cow's milk is the best infant food, and that to depend upon anything else as a permanent food is to hazard the child's life.

Let us look at some of the reasons for this. It is assuredly not from any mere prejudice that canned condensed milk and the commercial infant foods have been given up by intelligent physicians as substitutes for breast feeding; but simply because experience has shown the dangers which lurk in them and the objections to which they are open. Infant feeding is a problem in nutrition, and the success of any method is to be judged by its ultimate results; for the immediate results with these foods are not infrequently most satisfactory and delightful. As an illustration, take the case of an infant who has been fed upon cow's milk not properly adapted, by modification, to its digestion. How often does one see as a result of such feeding continued fretfulness and discomfort, often attacks of severe colic, and the passages of stools containing large, hard curds. At this juncture the substitution of some commercial food may be followed by the almost immediate disappearance of the uncomfortable symptoms just mentioned. The experiment is often interpreted by the mother, and sometimes by the physician, to mean that cow's milk is not a suitable food, while one has been found in the commercial article which exactly meets the case.

But suppose that this food is now continued as the sole diet for several months, and what follows? The prolonged and exclusive use of such a diet reveals its fatal lack of some of the essential elements of food required by the growing infant, which are supplied by fresh milk and by nothing else. It may be three months, and it may be six months, before the effects of this is seen, but they come with great regularity, sometimes in the shape of scurvy or rickets; sometimes as a general malnutrition; as a consequence of which there is so feeble a resistance that any acute disturbance may prove serious, or it may lay the foundation for delicate health during all childhood.

Within the past few years upwards of twenty cases of infantile scurvy have come under my observation, these being, almost without exception, seen in children whose principal or sole diet consisted of some one of the commercial foods. Said one very intelligent father whose child was found to be suffering from a severe form of that disease, when the etiology of the

scurvy was explained to him: "Why are not these facts published so that not only the few physicians who have special opportunities, but the medical profession generally and the public may be made aware of these dangers and so avoid them?" He could scarcely credit the statement that a large number of such cases had been placed on record, and also that the commercial foods did not have the endorsement of the most intelligent portion of the profession.

Again take the case of canned condensed milk. This is still widely used by the laity in the country as well as the city, and, I am sorry to say, is advised by many practicing physicians. During the past five or six years I have been in the habit of examining critically, all children with reference to the effects of the prolonged use of various forms of diet, and I have yet to see an infant reared solely on canned condensed milk who did not exhibit the signs of rickets to a greater or less degree, though a few would have passed at first glance as particularly healthy specimens. The feeble resistance of condensed-milk babies to acute disease has long been noted by many observers.

The objections to those commercial foods which require in their preparation the addition of fresh cow's milk, is not so serious as to the group just considered. Some of these foods, consisting largely of soluble carbohydrates, may supply the additional amount needed by cow's milk when it is used for an infant food. But that they do more, is, I believe, not true; and until further evidence is adduced than at present exists, they cannot be regarded as modifying the casein of cow's milk, or increasing its digestibility. For routine use they are not to be compared with milk sugar, as used in ordinary milk modification.

Those foods which contain a large amount of unchanged starch are successful in the inverse proportion to the amount used. They serve a useful purpose as diluents of the milk and do not affect the nutrition in one way or the other.

The foods of this class are successful because of the fresh cow's milk which is used in their preparation, especially if the method of preparation secures a proper dilution for the casein of the cow's milk.

The addition of digestive ferments to milk, with the purpose of assisting the infant by a partial predigestion of the casein, is at times extremely useful. It should not, however, be continued



indefinitely, or the stomach will not acquire the capacity of doing this work. As a routine method of feeding it is greatly inferior to the proper modification of the elements of cow's milk.

We come, then, to this final proposition, to which all students of the subject of infant feeding agree, *viz.*, that no artificially-fed infant can safely be kept upon any permanent diet which does not contain fresh cow's milk. As temporary substitutes the commercial foods may at times be admissible, but their use should go no further.

While we must depend upon milk, and practically upon cow's milk, and are not upon safe ground without it, certain problems still present themselves for solution. Cow's milk differs from breast milk in several important particulars, both in its chemical composition and in the bacteria which it always and everywhere contains. Besides it must be taken into account that milk is easily contaminated, and may become a vehicle of disease unless handled with great care. How to overcome these obstacles is the problem which has occupied the students of infant feeding for the past few years, and which still engages their attention. Whether the difference in chemical composition, or the presence of bacteria is the more important, is still a matter of discussion. In Germany the latter opinion seems to prevail, and consequently the great majority of German writers still advocate sterilization at a high temperature (212° F.). In this country, on the contrary, high-temperature sterilization as a routine practice is now advocated by very few, heating to a lower temperature (155° to 170° F.), *i.e.*, Pasteurization, being regarded as quite sufficient for all ordinary purposes; even this is thought, by very many, quite unnecessary where the production and handling of milk can be properly guarded, except in very hot weather.

It is in America especially, or we may say in America only, that anything like the accurate modification of the proportions of the different elements of cow's milk has been attempted. The methods employed in Germany in "*Gärtner's Fett-milch*," are crude in comparison with those used in the milk laboratories of our large cities.

It would be going beyond the limits of this article to enter upon the discussion of the subject of milk modification. Its importance is everywhere realized. It is of interest in the present

connection to glance at the steps by which our present position has been reached.

First was the period of indefinite modification, in which the milk was simply diluted with water, and sometimes also sugar, usually cane sugar, was added.

Secondly came the period of definite modification. After the composition of breast milk had become pretty accurately known, there were used various milk and cream mixtures in which it was aimed to secure the exact proportions of fat, sugar, proteids, etc., which existed in average breast milk. A single formula was made to do duty for all infants, one physician advocating one and another another—one which was widely employed analyzing 4 per cent. fat, 7 per cent. sugar and 2 per cent. proteids. This was to be diluted with water in the case of young infants.

Thirdly, the period of accurate modification. According to this method which is now widely used, the proportions of the different milk elements—fat, sugar, proteids, etc.—are varied separately according to the age and digestion of the particular infant under observation. Following this plan it is usual to start with a milk the composition of which resembles breast milk, except that the percentage of proteids is considerably lower on account of the difficulty which the young infant has in digesting the casein of cow's milk. The proteids are then gradually increased with the child's powers of digestion. In carrying out this method of feeding it is of great advantage to have the assistance of a laboratory, such as the Walker-Gordon laboratories which have been established in half a dozen of our larger cities, but the principle can be carried out anywhere if the physician knows even approximately the composition of the milk and cream he is using, particularly the amount of fat they contain. In using this it is necessary to have some way of expressing definitely the proportions used, and none is so satisfactory as that of giving the percentages of the different elements, fat, sugar, etc., employed.

It is not claimed that any modification of cow's milk can make it identical with breast milk, or in chemical composition in the digestibility of its proteids, but that we can approximate the natural food of the young infant more nearly by a modification such as has been mentioned, than by any other form of substitute feeding. Such feeding has certain advantages over

breast feeding in that proportions of the different elements, fat, proteids or sugar, may be easily altered separately in cases where any one may be difficult of digestion, this being possible in the case of breast milk only to a limited degree.

To the view just stated, at least in its essential features, the great majority of the students of the subject of infant feeding in America have now come, *viz.*, the modification of cow's milk by percentages, the general guide being the composition of breast milk, but the guide in the particular case being the proportions best suited to the digestion of that infant.

We have thus far considered the differences between the chemical composition of cow's milk and breast milk, and have seen that these differences may be, although never entirely overcome, at least so much lessened as to make cow's milk a food which may be digested by average infants. It is also a fact so well established as not to need argument here, that the nutrition of an infant who is able to digest properly modified cow's milk is on safe ground, no other food being necessary for its healthy development. This is something, as we have already seen, that cannot be said of any of the commercial foods.

We pass now to a consideration of the other objection to cow's milk as an infant food, *viz.*: its bacterial content. The presence of the germs of the specific infectious diseases—diphtheria, typhoid fever, tuberculosis, etc.—may be a source of great danger, but after all not a very frequent one. It is a danger that, with the supervision of milk production which it is easily possible to give, can be removed altogether. It is not of course meant that such supervision now exists, except to a very limited degree, but the experiment has gone so far as to demonstrate that such milk can be secured anywhere if either the public or the medical profession are united in demanding it.

The presence of other bacteria than those just referred to are for ordinary purposes not less important. These are those which affect the keeping properties of the milk and to some degree, no doubt, its digestibility; their presence is constant, varying from a few thousands to four or five millions to each cubic centimetre. This depends essentially upon the care exercised in the handling of the milk, and the time since it left the cow.

There are two methods of getting rid of the bacteria of milk: the first to destroy them by heating the milk; the second to



keep them out by the exercise of the most scrupulous cleanliness in the production and handling of the milk, and greatly shortening the time from the cow to the infant.

The whole question of milk sterilization is still *sub judice*. That simply heating cow's milk to 212° F. for thirty, sixty or ninety minutes thereby fits it for infantile digestion, I do not believe. My experience is that the heating of milk in this way does not greatly influence its digestibility, although I recognize its value in cities during hot weather in the prevention of diarrhœal diseases. For myself I believe that the value of milk sterilization consists in improving its keeping qualities, and in the destruction of pathogenic germs, but that with a milk which is fresh, and as free from bacteria as has been shown to be practically possible, sterilization is unnecessary. I am almost willing to say, undesirable, unless milk must be kept more than thirty-six hours and no ice can be had. This will, I believe, be the milk of the future. For the present, however, some form of heating milk, is for general use, desirable, the lower temperature 155° to 170° F. for thirty minutes, being greatly to be preferred to higher temperatures and longer periods.

In closing this cursory survey of the question we will first summarize the points which may be considered as well established, and then mention some of the most important questions still under discussion. It is well established:

1. That good breast milk is the best infant food.
2. That no substitute for breast milk can be trusted which does not furnish essentially the same elements, fat, sugar, proteids, etc., as breast milk.
3. That these elements are found only in the milk of other animals, cow's milk being the only one that is available for general use.
4. That cow's milk requires some modification before it is fed to infants; first, because the proportions of the different elements (fat, sugar, etc.), are not the same as in breast milk; and secondly, because some of these elements, notably the proteids, are not identical with those of breast milk.

The important questions in infant feeding which are now in dispute are:

1. With reference to heating milk: Whether all milk shall be heated, if so, to what temperature and for what time; whether the purpose shall be mainly to destroy pathogenic germs, or to

improve the keeping properties of the milk; also whether heating improves its digestibility, or the contrary.

2. With reference to cleanliness: What the standard of a "clean milk," bacteriologically speaking, shall be; also whether the exclusion of pathogenic germs by care and intelligence, and a great reduction in number of saprophytic forms by scrupulous cleanliness in milk production, may not give us what we need—clean milk a few hours old, which will have all the advantages of Pasteurized milk without any of its possible disadvantages.

3. With reference to milk modification: Whether such accurate modification as is measured by variations of small fractions of a per cent. is really essential, or whether less accurate modification may not give equally good results provided the original milk is the best possible. Much is still to be learned regarding precise indications for varying the proportions of the different elements in milk modification.

Infant feeding is a large subject, and let no one think to secure the best results without giving both time and thought to the problem. It is still a rich field for study, which will amply repay any one who devotes himself to it.

14 WEST FIFTY-FIFTH STREET.

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**Adenoid Vegetations and their Bacilli.**—Gourc (*Thèse de Paris*), from examination of 213 cases, concludes that there is no bactericidal property in the secretion of the glands, and probably none in the nasal mucus. Latent lacunar encysted adenoiditis is a rarity. As regards the bacilli, 25 examinations disclosed none; 37 streptococci, but never pure; 60 staphylococci, pure; and 69 associated with other micro-organisms; other forms of cocci, 41 pure and 54 associated; pneumococci, 3; leptothrix buccalis, 1 pure and 1 associated; and a short bacillus not taking Gram's stain in 1 case. There was hypertrophy of the tonsils in 17 cases; tuberculosis, collateral, in 30; hereditary in 18 and personal in 17, but Koch's bacillus was never detected in the vegetations. Metastatic anginae and laryngitides no doubt depend on the above bacteria, and some cases of facial erysipelas may be explained by the streptococci. Contraction of the nose, acute arching of the palate, and dental deviations due to hereditary causes, rickets, scrofula, or lymphatism may accompany but are not results of adenoid growths. Operation should be complete, as remnants left do not atrophy.—*British Medical Journal*.

## CERTIFIED MILK.

BY HENRY L. COIT, M.D.,  
Newark, N. J.

“Certified Milk” is a term employed to designate cows’ milk of a particular grade of purity; it was first used in connection with a plan brought to the attention of physicians, and finally put in operation in Essex County, N. J., in 1893.

The plan had its origin in 1889, when, coincident with the introduction of the more scientific methods of infant feeding, the great difficulty of obtaining cows’ milk of a uniform high standard, was brought forcibly to the attention of the writer.

An effort was made at this time to obtain relief by legislative enactment, which would allow the employment of State funds, to correct the current injurious practices at the sources of milk supply. But after two years of diligent labor through the Medical Society of New Jersey, very little was accomplished, except to awaken a general interest in the subject and to establish the conviction that the profession had an important duty to perform.

It was found that the clinical relations of this question appealed so strongly to physicians, that their co-operation in any properly organized effort to secure reform was assured. Accordingly in January, 1893, a plan was presented to the Practitioners’ Club—a leading medical society of Newark—which met with their unqualified endorsement.

It provided for a commission of medical men, who, with the support of physicians generally, should endeavor to influence a supply of milk produced under regulations imposed by themselves.

It was considered essential to success that the commercial interests of the dairymen should not be ignored, in the attempt to obtain the purely scientific objects of the commission. It was proposed that an approved dairyman, possessing honor, financial ability, and dairy facilities, be induced, by reason of promised medical support and the increased price of the milk, to conduct his dairy in conformity with a contract made with the commission in due legal form.

That the commission establish correct clinical standards of purity for cows’ milk; become responsible for a periodical inspection of the dairy under their patronage; provide for bi-



monthly examinations of the product by a chemist, a bacteriologist, and likewise frequent scrutiny of the stock by competent veterinarians.

By the employment of well-known experts in these three departments it was hoped to establish a reliable safeguard against the common dangers of contaminated and impoverished milk.

Three general requirements, or standards of quality, for the milk were formulated:

First.—An absence of large numbers of micro-organisms, and the entire freedom of the milk from the pathogenic varieties.

Second.—Unvarying resistance to early fermentative change in the milk, so that it may be kept under ordinary conditions without extraordinary care.

Third.—Having a constant nutritive value, of known chemical composition, and a uniform relation between the percentage of the fats, proteids and carbohydrate.

The legal requirements are stringent and binding. The code includes ample sureties for its fulfilment; necessary forfeiture clauses, a territorial limit for the sale of the product and provision for the compensation of the experts employed by the commission.

It controls the character of the land used for pasturage and the cultivation of fodder; determines the construction, location, ventilation and drainage of buildings; provides for an abundant and pure water supply, and prevents the use of water from wells or springs holding surface drainage.

It requires in the stable, cleanliness and order, and disallows the keeping of any live stock, except the cow, within 300 yards of the dairy buildings.

It regulates the assortment of the herd with reference to uniform results, as well as the health, the consanguinity, the breed and temperament of the animals.

It excludes any that are judged by a competent observer to be tuberculous, or found in a state of health prejudicial to the herd. It forbids the use of phenomenal milkers, provides for proper housing and shelter of the animals, together with their grooming, their treatment, and the prompt removal of their waste from the stable.

It regulates the feeding with reference to uniformity in the chemical composition of the product, and restrains the use of all

questionable or exhausted materials for food. It governs the collection and handling of the milk by insisting upon a proper regard for cleanliness as viewed by the bacteriologist, as it relates to the animal, her surroundings, the milkers' hands, the vessels, and the association of persons handling the milk with immediate or remote sources of infection.

It controls by minute specified requirements every step in the cooling of the milk, and its preparation for shipment, and adds to the product every detail of care known to promote its keeping qualities or favor its safe transportation.

The motives of the commission are disinterested and they forbid to themselves any pecuniary rewards. The experts are employed by the commission and are paid by the dairyman. The bi-monthly reports of these officers to the commission are the basis of their approval of the product, which in the form of a certificate, acquires a commercial value to the dairyman.

Duplicate printed copies of the certificate are used only for the information of the physicians in the localities where the milk is sold.

Certified milk, being designed for clinical purposes, is subject to the following restriction in its sale: namely, that when at any time the demand exceeds the supply, and the milk is required by a physician, the holder of a physician's order is a preferred purchaser. Thus far this work has been largely educational and experimental; and yet it has not been without some measure of practical results, as respects the superior quality of the milk obtained, the approximation to the standards adopted, and in the benefits derived from its use in the dietetic management of the sick.

51 HALSEY STREET.

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**Annual Report of the Children's Hospital.**—The Annual Report of the Boston Children's Hospital shows that during last year, the twenty-eighth year of its existence, 779 patients were treated in the wards, 2,959 in the out-patient department, and 343 at the convalescent home, making the total number treated during the year 4,081. Antitoxin has been given as a prophylactic against diphtheria as a routine measure to all children entering the institution, with the result that only one case of diphtheria originated during the year, and that in a case where the antitoxin was unavoidably omitted. The report closes with an appeal for funds to carry on the work.

## CERTIFIED MILK IN BUFFALO.

BY IRVING M. SNOW, M.D.,

Clinical Professor of Diseases of Children, Medical Department, University of Buffalo; Member of American Pediatric Society; Physician to Buffalo Fresh Air Mission Hospital, etc., Buffalo, N. Y.

Prior to January, 1895, when the Certified Milk Dairy was established, the milk supply of Buffalo was furnished in the same old fashioned, careless way, that prevails in almost all the large cities of the country. Milk was purchased from the farmers of the vicinity at a price varying according to the season, from eight to twelve cents a gallon. It was seldom aerated or cooled, being taken directly to the station and shipped to Buffalo in large and often imperfectly cleaned cans. Here the milk was bottled for convenience of delivery in the office or barn of the dealer, and reached the consumer from eighteen to thirty hours old. The richness in cream, cleanliness, and age of the milk depended wholly upon the good nature and honesty of the farmer and milkman.

In general the business was managed in an unscientific and slovenly way. There was no inspection of the milch cows by veterinary surgeons, no test for tuberculosis. The cleanliness of the barns, care in milking and shipping, were left to the conscience of the farmer, poorly paid and hurried. A still more unfortunate feature of the matter, existed in the feeding of brewer's grain to the cows, a practice almost universal among farmers living in the vicinity of large cities. This food, brewer's grain, is the cheapest fodder that is available, and produces very poor milk. The milk quickly sours, the casein readily decomposes and is a fertile cause of sickness among infants.

Our municipal inspection, since much improved, was as efficient as possible with the limited power and money at the disposal of the Health Commissioner.

So difficult was it to secure fresh, pure milk that when, in 1894, Mrs. Frank F. Williams made an effort to obtain it for her infant child, no reliable milk was to be found; she made persistent inquiry and in the course of a few months had investigated the quality of the milk, and methods of handling of most of the large milk dealers in the city. Nevertheless she failed to discover that



any of them considered inspection necessary. They simply bought the milk at the lowest market price from the farmer, and sold it to as large a clientele as possible in the city; no attention was paid to the source of supply, cleanliness of the surroundings or kind of food given to the cows.

As a result of precise knowledge of the quality of city milk, Mrs. Williams concluded that little if any of the milk sold in the city was safe for a delicate infant, and purchased a cow for her own use. She then called the attention of the profession to the fact that pure milk was difficult to obtain, and that no satisfactory restrictions were thrown about the sale of milk, and invited the medical profession to take steps to reform the methods of handling milk.

After some discussion it was resolved to pursue the ideas of Dr. Coit of Newark, and his plan of certifying to milk was adopted. A committee of physicians, Dr. Charles G. Stockton, Dr. Henry R. Hopkins, Dr. DeLancy Rochester, Dr. Renwick Ross, Dr. Irving M. Snow, made a contract with Mr. George D. Briggs of Elma, who owned a herd of cows on a farm ten miles from Buffalo.

The terms and conditions of the contract were nearly identical with those of Dr. Coit, the idea being to secure:

1. A chemical examination of the water supply.
2. Cows free from tuberculosis, to be regularly tested and examined by a veterinary surgeon.
3. Clean, well ventilated barns.
4. Cleanliness in milking, the cows to be groomed, the udders washed, milker's hands and garments to be clean.
5. Milk to be at once strained, aerated, and cooled; to be bottled in sterilized bottles, each bottle to be stamped with the hour and day of milking so that the consumers might have some idea of the age of the milk.
6. Exclusion of brewer's grain from the food of the cattle, and definite rules as to a proper dietary.
7. A monthly chemical and bacteriological examination of the milk, made as is the veterinary's visits at irregular times unexpected by the dairymen.
8. A periodical visit from one of the medical committee who critically and thoroughly inspected the whole plant and its methods.

Upon the results of the veterinary's report, the examination

of the chemist and bacteriologist, and the investigations of the medical committee, a certificate was issued every month. Thus the milk supply was supervised and certified to by a disinterested committee.

The price of milk in Buffalo is six cents a quart, but this was judged too low to fulfil the exactions of the committee, which required Mr. Briggs to spend more than usual for the care and feeding of his herd, to pay his veterinarian and chemist, and to ship the milk in bottles, this being more expensive than cans and costing, curiously enough, nearly twice as much as the transportation of bottled beer. It was agreed that the milk should be sold at retail for ten cents a quart.

Mr. C. W. Boyce, a high class grocer in the best residence district of the city, agreed to deliver the milk and to assume the responsibility of the bills, he to pay Mr. Briggs six and a half cents a quart, all unsold milk at the end of the day to be poured into cans and sold as ordinary grocers' milk at five cents a quart. Thus Mr. Briggs received twenty-six cents a gallon, paying for his chemist and veterinarian and transportation, while his neighbors operating under the old methods, were paid eight and ten cents a gallon.

The milk reaches the city at 8.30 A.M., being in transit forty minutes and is all delivered before noon, hence both night and morning milk being in the same wagon the consumer can procure milk either six or eighteen hours old. The milk is neither filtered through absorbent cotton nor Pasteurized; both processes are unnecessary in fresh milk and mask the bad quality of old stale milk. The index of the richness and freshness of milk is the percentage of fats and the number of bacteria; the results of the examination are appended.

The committee requires the percentage of fats to be 4.5 per cent. and the number of bacteria to be below 10,000 per c.c. How the richness varies and how the bacteria multiply and diminish is shown by our table of analyses. As to the number of bacteria, it is very common to find milk in the City of Buffalo with from 1,000,000 to 4,000,000 per c.c., grocer's milk being always the worst. The milk from the best dairies show from 125,600 to 300,000 per c.c. Professor Sedgwick of Boston has recently shown that grocer's milk in Boston contains from 7,000,000 to 19,000,000 bacteria per c.c. Very often the most dang-

erous milk is not sour but swarms with bacteria. People will buy dirty milk but not sour milk.

ANALYSES AND BACTERIOLOGICAL EXAMINATIONS OF CERTIFIED MILK IN  
BUFFALO DURING 1896 AND 1897.

Date .....	March 2d.	March 14th.	April 27th.	May 20th.	June 6th.	June 20th.	July 2d.	July 18th.
Bacteria per c. c. ....	2600	2700	152,421	26,679		9350	4750	9900
Solids .....	14.53	14.63	14.39	12.80	14.04	14.07	13.80	13.75
Fat .....	5.94	5.72	4.41	5.06	4.95	4.97	4.95	5.13
Sugar .....	5.17	5.55	5.57	5.95	5.86	5.49	5.21	4.81
Casein .....	2.69	2.63	3.75	1.09	2.49	2.97	2.95	3.09
Salts .....	0.73		0.66	0.70	0.71	0.64	0.69	0.72

ANALYSES AND BACTERIOLOGICAL EXAMINATIONS OF CERTIFIED MILK IN BUFFALO DURING  
1896 AND 1897.—*Continued.*

Date .....	Aug. 1st.	Aug. 17th.	Sept. 16th.	Oct. 5th.	Oct. 19th.	Nov. 7th.	Nov. 26th.
Bacteria per c.c. ....	77,800	7550	27,400	7750	4500	12,600	17,500
Solids .....	13.88	14.76	14.55	13.63	13.46	14.01	13.59
Fat .....	5.25	5.6	4.95	4.25	4.75	5.00	4.55
Sugar .....	5.60	4.78	5.28	4.73	4.86	5.50	4.93
Casein .....	2.40	3.68	3.62	3.97	3.14	2.90	3.38
Salts .....	0.63	0.70	0.70	0.68	0.71	0.61	0.73

ANALYSES AND BACTERIOLOGICAL EXAMINATIONS OF CERTIFIED MILK IN BUFFALO DURING  
1896 AND 1897.—*Continued.*

Date .....	Dec. 22d.	Jan. 11th.	March 8th.	April 7th.	May 11th.	July 30th.	Sept. 9th.	Oct. 8th.
Bacteria per c.c. ....	19,066	6400	.766	3450	6750	36,900	12,400	57.70
Solids .....	14.46	14.67	15.15	13.11	13.44	13.86	13.14	13.32
Fat .....	4.95	4.85	5.35	4.35	5.02	4.15	4.75	4.35
Sugar .....	4.39	3.99	4.22	4.63	5.32	4.95	4.96	5.38
Casein .....	4.40	5.16	5.01	3.43	2.39	4.06	2.74	1.07
Salts .....	0.72	0.67	0.77	0.70	0.71	0.70	0.69	0.52

Milk rich in bacteria is difficult to digest, causes food vomiting, dyspepsia, mycotic diarrhœa and ileo-colitis in children. A very slight negligence in the requirements of the certified milk committee suffice to cause an enormous increase in the number of bacteria. Lack of ice, with hot weather of April, 1896, ran the bacteria in certified milk up to 152,421 per c.c. In August, 1896, dirty udders and dirty hands caused the bacteria to amount to 77,800 per c.c. The lowest number was in March, 1897, 766 per c.c. The average in twenty-one examinations was



21,450 per c.c., and excluding two very bad months, 11,600 per c.c. This is of course a record of milk as sold on a commercial basis, not the result of extraordinary care by expert bacteriologists to produce a sterile milk.

Excessive acidity, with its accompanying increase in bacteria, is avoided by shipping the bottles in cases filled with ice in summer.

Mr. Briggs' technique in milking is as follows: The milkers wear clean overalls, hands are rigidly inspected, the udders are wiped off, the first few jets of milk are thrown away, the milk is twice strained through cheese cloth and is aerated by being poured through a sieve down over a cone filled with cold water. It then flows into bottles which have been first washed and then sterilized in an oven at 400°.

The cleanliness of the whole procedure is much stimulated by the unexpected visits of the medical committee, the veterinarian Dr. F. C. Crandall, and the reports of the number of the bacteria, whose increase the milkers have learned to dread, their ambition being to reduce the number of bacteria.

The sale of certified milk has been in operation in Buffalo about eighteen months. The quantity sold varies from 180 quarts a day in winter to 130 in summer, when many of the consumers are out of town. Certified milk is used chiefly for children, for invalids and families particular as to their milk supply.

The effects of this reform in the milk supply are highly satisfactory. Our community is rapidly being made familiar with the extreme care necessary to procure fresh milk in a large city and is pleased to find scientific methods and efficient supervision applied to this very important food commodity.

A noticeable improvement has taken place in the quality of the average milk sold in Buffalo. Many herds have been tested for tuberculosis and some care and cleanliness is observed in handling and shipping the milk. The Health Commissioner and the city chemist have a standard of pure milk and continually hold the cleanliness and freshness of certified milk over the local dealers. A rival concern has lately adopted some of our methods and sell a fairly clean milk to its customers.

A rigorous inspection of the milk supply is necessary in every large city, and should be practiced in all highly civilized urban communities. No better method has yet been suggested than Dr. Coit's method of certifying to milk by a disinterested

committee. In Buffalo the medical press and the majority of the physicians have given very languid support to the reforms introduced by the certified milk committee and have watched in an apathetic way the success of the new enterprise.

The medical committee acknowledge with gratitude the great assistance given to them by Dr. Ernest Wende, Health Commissioner, Professor Herbert M. Hill, City Chemist of Buffalo, and Mrs. Frank F. Williams.

476 FRANKLIN STREET.

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**Airless Lungs in Children Who Have Breathed.**—Harbitz (*Norsk Mag. f. Lægevidenskaben*) reports the result of the *post-mortem* examination of a child, which is interesting from a medico-legal point of view. The child had been born in a hospital, had lived for half an hour, had been heard to cry and been seen to make regular respiratory movements by the student officiating. In spite of this the lungs were found to be perfectly airless. They were brownish-red in color, with a few pink spots, fleshy and atalectic to the touch, and from the cut surface only some slight sanious but not frothy liquid could be pressed out; the cut pieces sank in water. Another proof that this child had lived was found in the distension of the stomach by air and by its presence in the duodenum and upper part of the jejunum. The development of the child was that consistent with the beginning of the ninth month. The usual explanation given for this condition of lungs in children who have breathed, is that the lungs, on account of their elasticity, during a prolonged death agony are emptied of air, as by every inspiration less air enters than is expired.—*British Medical Journal*.

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**The Hospital for Sick Children**, Great Ormond Street, London, contains 186 beds, divided into 88 medical, 73 surgical, and 25 for special and infectious cases, besides 52 beds at the convalescent branch, Highgate. The hospital having been recognized by the conjoint Board for England as a place where, under the new curriculum, six months of the fifth year may be spent in clinical work, the practice is arranged to meet this need and is open to students who have completed four years of medical study and also to qualified medical men. Appointments are made every three months to six medical clerkships and six surgical clerkships, which are open to students of the hospital. Lectures or demonstrations are given once or twice every week during both winter and summer sessions. The sessions are of ten weeks' duration, and begin in October, January and March. Fees for hospital practice, three months, 2 guineas.

# THE STERILIZED MILK DISPENSARY OF ST. JOHN'S RIVERSIDE HOSPITAL AND ITS WORK.

BY S. E. GETTY, M.D.,

Surgeon to the Hospital, Yonkers, N. Y.

The Sterilized Milk Dispensary of St. John's Riverside Hospital, Yonkers, was started in the middle of July, 1894. The aim of the founders was to supply a pure milk, which, properly proportioned and Pasteurized and put up in sealed bottles, would be ready for infant feeding. The price of the milk was fixed at such a rate that the poorest could buy it. It was believed that if enough of this milk were distributed during the summer months the death rate among young children would be materially reduced, and at the same time, the public would realize the necessity of feeding pure milk to children, and in course of time demand it of the dealers.

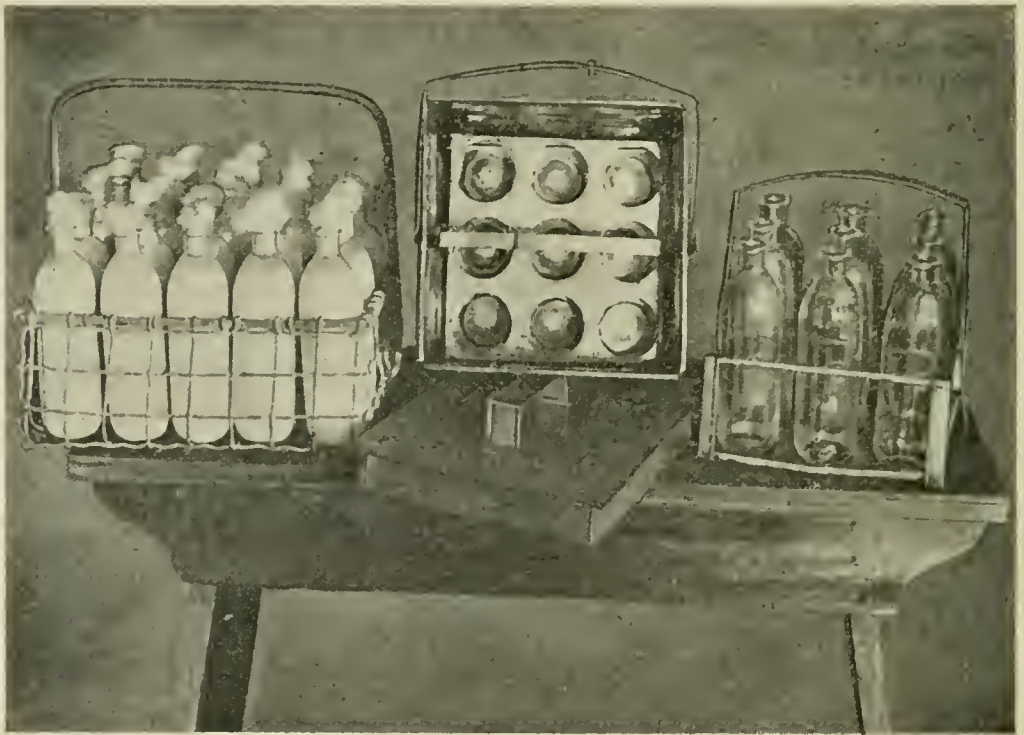
The laboratory which is situated on the hospital grounds is open from the first of June until the first of October. We distribute the milk with our wagons to private customers, and through drug stores of which at present there are six, selected with regard to centres of population, to the public.

Much care is taken, in the first place, in the selection of the milk. The herd has been tested regularly for tuberculosis and the milk is produced under the best conditions. On its arrival at midnight the milk is placed in a refrigerator until Pasteurization begins at five in the morning. We have two sterilizers which hold twelve racks of twenty-five bottles each. They are large copper boxes with a tank at the bottom, which is filled with water and into which a steam coil is run. Two thermometers are used; one gives the temperature of the air inside the sterilizer, and the other, which is placed in a bottle of milk, gives the temperature of the milk. When the temperature of the milk reaches 167° F. the steam is shut off, and the temperature is held at this point for twenty minutes. The milk is then rapidly cooled by being set in running water and sent out to the stations, where it is placed in ice-boxes used exclusively for this milk.

To sterilize the milk cans and other utensils we have a large steam chest lined with sheet copper, tinned, and a steam connection at one end; at the other end a thermometer is fitted. The utensils having been thoroughly washed, are placed in this chest and the temperature allowed to rise to 212° F., and kept



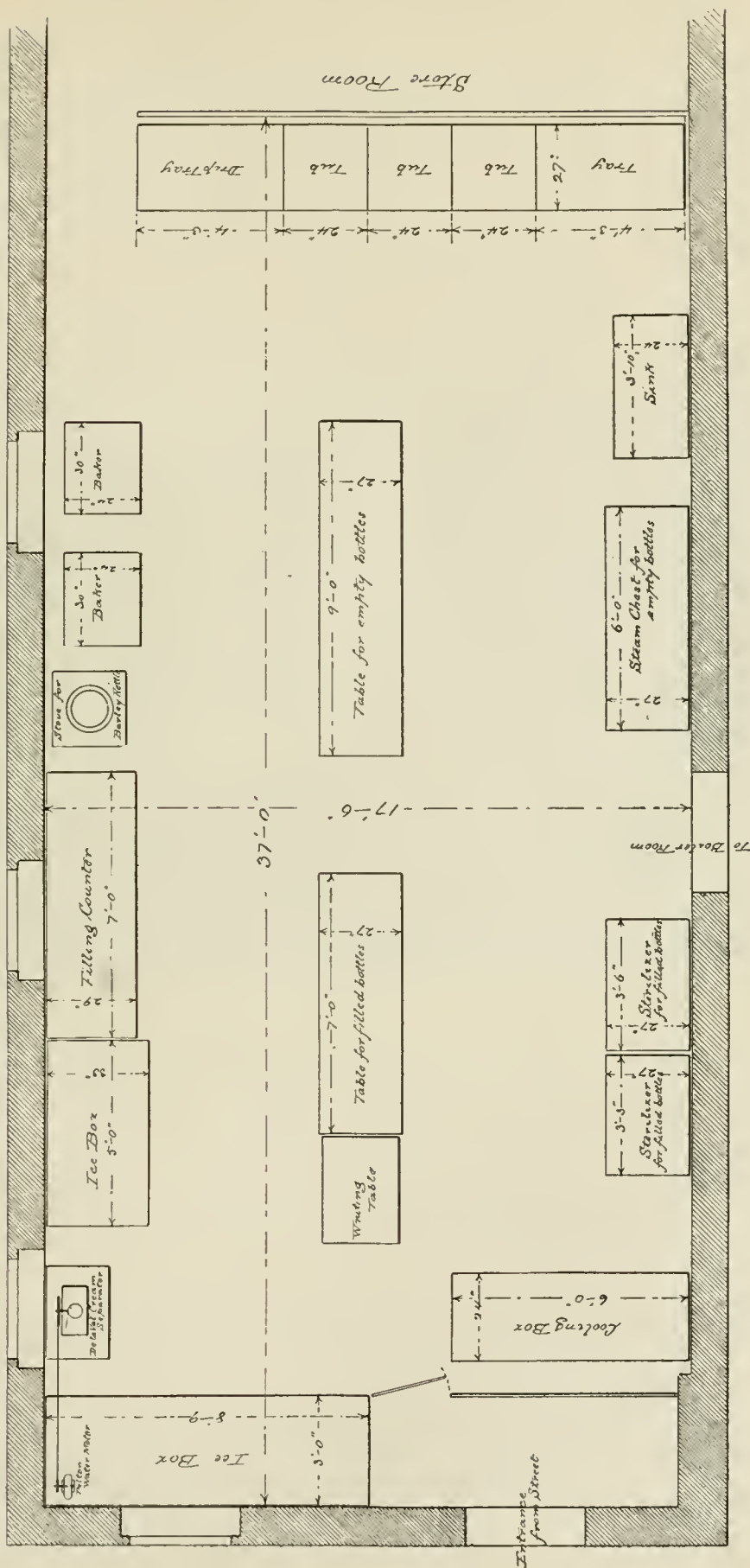
there for twenty minutes. Later in the day as the empty bottles, cans and the racks are brought back, they are subjected to the same process before being washed. The bottles are then placed in a tub of hot water and savagray, and cleaned with a brush. In a second tub this process is repeated, and in a third tub they are rinsed in hot water. After being drained they are packed in the bakers, which are galvanized iron boxes, with a series of Bunsen burners underneath and a thermometer in the top. The bottles are subjected to a heat of  $250^{\circ}$  F., for one hour and left in the baker until the next morning. In the morning the bottles are



RACK OF FULL BOTTLES FOR DRUG STORE. CASE AND RACK OF EMPTY BOTTLES FOR PRIVATE CUSTOMERS.

put into galvanized iron racks with handles and filled. The filling is done by pouring milk into a galvanized iron cylinder having at the most dependent part an outlet to which is fitted a rubber tube with a pinch cock. The bottles when filled are corked with plugs of non-absorbent cotton.

Plain milk is sold at the drug stores in eight ounce bottles at two cents; modified milk in six ounce bottles at one cent; milk and barley water in six ounce bottles at one cent, and plain barley water in six ounce bottles at one cent. The various kinds of milk are delivered at the houses of customers, packed in



—Plan of Sterilized Milk Dispensary —  
— St. John's Riverside Hospital, Yonkers, N.Y. —  
Sept 20/97 82  
Scale 1/2"

ice, for three cents a bottle, and special prescriptions are filled at thirty cents daily. For filling prescriptions the cream and skim is obtained by a de Laval separator, run by a water motor. The barley water is made in a tin lined copper kettle and boiled one and one-half hours. All dilutions of the milk are made with distilled water. Milk sugar is used to sweeten the modified milk and cane sugar the milk and barley water.

To aid in the intelligent use of the milk we distribute cards among the poor giving these directions:

“STERILIZED MILK DISPENSARY OF ST. JOHN’S RIVERSIDE HOSPITAL.

*“Rules for Infant Feeding.*

- “ 1st Month feed every 2 hours. Two feedings between 10 P.M. and 7 A.M. 1½  
“ to 3 ounces in each feeding.
- “ 2d to 3d Month feed every 2½ hours. One feeding between 10 P.M. and 7 A.M.  
“ 2½ to 4½ ounces in each feeding.
- “ 4th to 5th Month feed every 3 hours. No feeding between 10 P.M. and 7 A.M.  
“ 4 to 5½ ounces in each feeding.
- “ 5th to 9th Month feed every 3 hours. No feeding between 10 P.M. and 7 A.M.  
“ 5½ to 7 ounces in each feeding.
- “ 9th to 12th Month feed every 3½ hours. No feeding between 10 P.M. and 7 A.M.  
“ 7½ to 8 ounces in each feeding.
- “ 12th to 18th Month feed every 4 hours. No feeding between 10 P.M. and 7 A.M.  
“ 8 ounces in each feeding.

“This milk is intended only for well babies. If the child is sick  
“send for family physician. Feed the baby only at the regular  
“hours, and do not let the baby sleep with the nipple in its mouth.  
“For the first year, if the baby is well, feed only modified milk.  
“After one year of age give pure milk sterilized. If the baby  
“vomits do not feed so much at a time. If the baby has diarrhœa,  
“stop the milk, send for family physician. Never give a baby  
“tea, coffee or stimulants. Never give a baby under two years  
“uncooked fruit, except orange juice. Bathe the baby once every  
“day, wash the eyes and mouth carefully with plain warm  
“water. See that the baby has one movement of the bowels  
“daily. If possible, let the baby sleep in its crib. You may  
“smother it in your bed. Keep the milk in a cool place.”

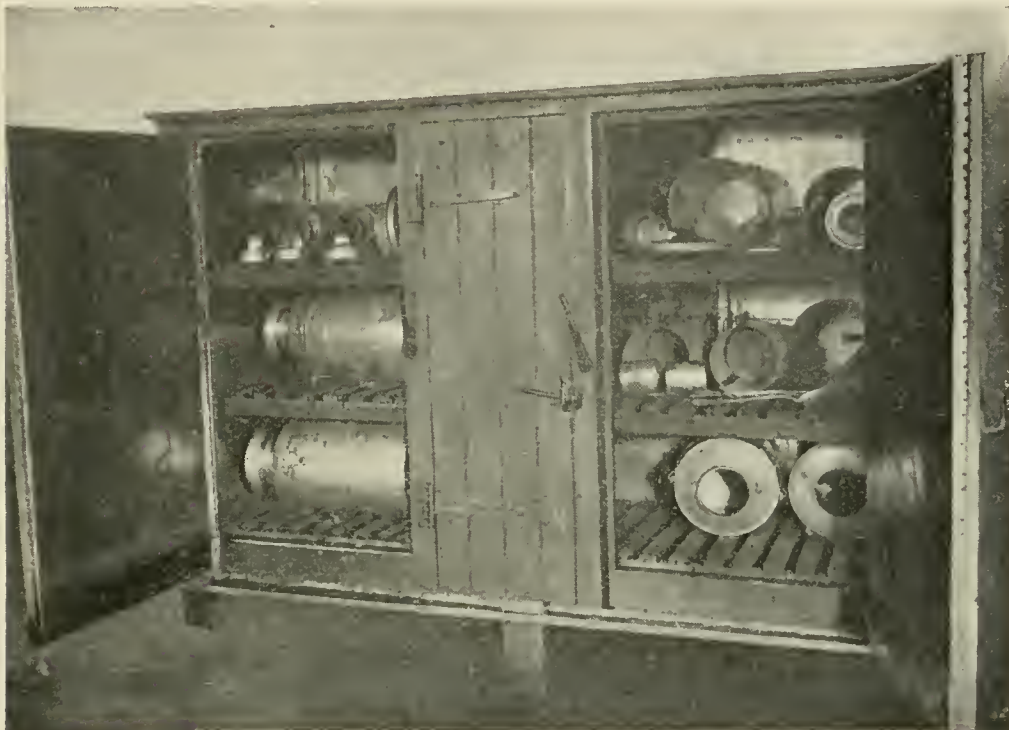
This summer, partially through the agency of the dispensary, a trained district nurse has visited the tenement houses to distribute the cards and give advice, and in cases of need furnish free orders for milk.

With each summer the work of the dispensary has increased. In 1894, 31,000 bottles were sold; in 1895, 64,000; in 1896, 78,000; and in 1897 the number increased to 90,000 bottles. To ascertain how the work was affecting the death rate we have tabulated the deaths among children under five years for the months of June, July, August and September in the years from 1892 to 1896, with the following results.: The average number



of deaths among children under five for the four years from 1892 to 1895, was 162; in 1896 the number was 135, a decrease of 37 deaths, or 17 per cent. The average number of deaths from digestive troubles was 91; in 1896 the number was 48, a decrease of 43 deaths or 47 per cent.

The effect of the work has not stopped with reducing the death rate of infants in summer. When the dispensary was opened in 1894, there were no dairies supplying milk drawn



STERILIZER FOR UTENSILS AND RETURN PACKAGES.

from tested cows and produced under modern hygienic conditions. Gradually, however, the public has awakened to the fact that pure milk can be produced, and on October 1, 1897, there are four dairies supplying such milk, in the aggregate of 1230 quarts daily out of a total supply of 14,000 quarts. This does not include the milk distributed by the dispensary. The price of milk varies from seven to ten cents per quart. One dairy supplying this milk at eight cents has more orders than it can fill.

We confidently expect that this work will increase in value and importance each year, and that in time public opinion will compel most, if not all of the dealers, to sell milk from cows which are non-tuberculous, which have been properly groomed, housed and fed. In short, to sell pure milk.

57 ASHBURTON AVENUE.

## THE STRAUS MILK CHARITY OF NEW YORK CITY.

BY ROWLAND GODFREY FREEMAN, M.D.,

Pathologist to the Foundling Hospital; Pathologist to St. Mary's Free  
Hospital for Children, New York City,

The Straus Milk Charity of New York City which was established in the spring of 1893, through the liberality of Mr. Nathan Straus and under the careful supervision of his private secretary, Mr. A. L. Kinkead, purposed to furnish to the poor a clean, safe and nutritious milk for infant feeding without the added cost which such products usually involve. At this time attention was being called to the contamination of ordinary city milk and the necessity for some method of purification.

Before the work was undertaken a number of the prominent pediatricists in this part of the country were consulted as to the best methods of carrying out such a plan. It was finally decided that a plant should be established on a public pier at the foot of East Third Street, a situation which furnished fresh air to those coming for milk and at the same time was in close proximity to a very large and very poor tenement house population.

The demand for this milk was so great that the original plant on the pier was unable to produce a sufficient supply. A two-story building, 25 x 80 feet on Avenue C, was then fitted up. The second floor was used for separating in order to extract dirt from the milk, for bottling, sterilizing the empty bottles, pasteurizing, cooling the milk, and preparing the modification and the barley water, while the ground floor was used entirely for cold storage. Refrigerator wagons were employed to transport the milk to the various branches.

The milk, on being received, was stored in large refrigerators on the ground floor. It was carried to the second floor as it was needed, where it was first passed through a centrifugal machine to extract the dirt, this dirt consisting of hair, epithelium, etc. It was then poured into reservoirs which fed the bottles. The bottles were of a special design, having sloping necks so as to be easy to clean, and spheroidal bottoms so that they could not stand up; this latter peculiarity was introduced so that they might not be left standing unstoppered, thus allowing contamination. The bottles were sterilized in ovens at a temperature of 150° C.,

(302° F.) for one hour. The bottles were rapidly filled on the bottlers and were stoppered with rubber stoppers with a groove cut in one side. These were loosely inserted, so that during heating air might pass out through the groove without dislodging the stopper. As the bottles were taken from the pasteurizers the stoppers were forced in tight, and then drawn still tighter by the lessened bulk of the cooling fluid.

It was thought best not to attempt to render the milk absolutely sterile by high temperature, since evidence had already been presented both by chemists and clinicians that milk was less serviceable as a food for infants after having been subjected to the heat necessary for absolute sterilization. The method known as pasteurization was adopted. Pasteurization consists in heating milk to a temperature of about 65° to 80° C. (149° F to 176° F.), for a certain period and then cooling it as rapidly as possible to about 10° C. (50° F.).

A temperature for pasteurization at 75° C. (167° F.) for twenty minutes was selected because it was considered that this temperature would do little injury to the milk and at the same time would kill almost all the bacteria present, and would surely kill those pathogenic bacteria most feared in milk—those of typhoid fever, diphtheria and tuberculosis.

The milk dispensed was subjected to a temperature of 75° C. (167° F.) for twenty minutes by means of large pasteurizers devised by the writer, and was then rapidly cooled by running water and then by iced water to 10° C. (50° F.) at which temperature it was dispensed with the direction that it should be kept cool and used within the ensuing twenty-four hours.

The method of pasteurization used was the same as that applied by me to the small apparatus which I have described.\* The principle is as follows: If into a definite amount of boiling water, the source of heat having been removed, a properly proportioned amount of cold milk be introduced in bottles under such conditions that they will not break, the temperature of the milk will be raised to the desired point, *i.e.*, 75° C. (167° F.). The amount of boiling water used in this apparatus is such that in raising the temperature of the milk through about 60° C. (108° F.), the water itself loses an equivalent amount of heat, so

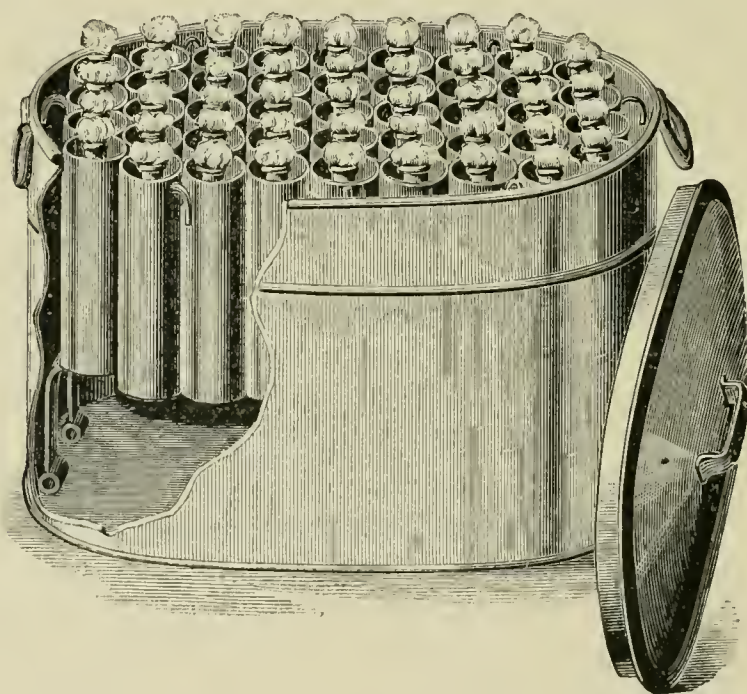
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\* On the Sterilization of Milk at Low Temperature, etc., *Medical Record*, July 2, 1892. Low Temperature Pasteurization of Milk at about 68° C. (155° F.), *ARCHIVES OF PEDIATRICS*, August, 1896.



that when the milk reaches its maximum temperature the water is of the same temperature.

The apparatus used at the Straus depot consisted of large copper boilers for the water, and copper receptacles for the bottles of milk. The boilers were twenty-four inches long and had a groove encircling them, to indicate the point to which they were to be filled with water, and a faucet at the level of the groove. A steam pipe was let in through one side of the boiler which ended at the bottom of the boiler. The receptacles consisted of groups of copper cylinders, each one just large enough to contain one bottle. These receptacles were made of different sizes,



THE PASTEURIZING APPARATUS ARRANGED FOR HEATING THE MILK BEFORE THE VESSEL IS COVERED.

for six-ounce, eight-ounce, or pint bottles. The apparatus was thus essentially the same as the small apparatus referred to above, except that it was of larger size, allowing a greater number of bottles to be pasteurized at a time.

The method of pasteurizing the milk was as follows: The boilers were first filled with water to the groove. The steam was then turned on and the water heated by the steam which entered it, and in a few moments it boiled. The sterilized bottles, having been cooled, were filled with milk and loosely stoppered with rubber corks which had previously been sterilized in boiling water. The stoppered bottles were then placed

in the hollow copper cylinders of the receptacles and the space surrounding the body of the bottle in each cylinder was filled with cold water. As they were prepared, they were left on a shelf until the water in the boilers generated steam vigorously, indicating a temperature of  $100^{\circ}$  C. ( $212^{\circ}$  F.). The steam was then turned off, any excess of water in the boiler was drawn off by opening the faucet, which was then closed again and the receptacles containing the filled bottles were set in the boiling water; the boilers were then covered and not disturbed for half an hour. The milk here reached a temperature of about  $75^{\circ}$  C. ( $167^{\circ}$  F.) in ten minutes, and remained at that temperature for the remaining twenty minutes. The cover of the boiler was then removed and the stopper of each bottle forced in tight. The receptacles containing the bottles were then removed and placed in a tank of running water for twenty minutes, at the end of which period the milk in the bottles had reached nearly the temperature of the surrounding water, that is  $20^{\circ}$  to  $25^{\circ}$  C ( $68^{\circ}$  to  $77^{\circ}$  F.). They were then sent by elevators to the lower floor, where the bottles were removed and placed in racks in iced water at a temperature of about  $10^{\circ}$  C. ( $50^{\circ}$  F.). They were kept here until dispensed. Sufficient milk for one day's use only was pasteurized.

As soon as one lot of receptacles was taken from a boiler, the steam was turned on again and the temperature of the contained water, now about  $75^{\circ}$  C. ( $167^{\circ}$  F.) was brought to boiling for a new lot of receptacles, which, with their bottles, were at once introduced.

A large number of experiments with milk subjected to this treatment, showed that by it the practical purposes of sterilization were accomplished. With each bottle of milk a rubber nipple was supplied which had been sterilized in boiling water.

At first but two sorts of milk were furnished: (1) Pure milk pasteurized in eight-ounce bottles; (2) A milk especially prepared for feeding infants, a one-half dilution with water, sugar of milk and lime-water added as follows:

Sugar of milk,	.	.	.	.	.	.	12 oz.
Lime-water,	.	.	.	.	.	.	8 oz.
Milk,	.	.	.	.	.	.	1 gal.
Water,	.	.	.	.	.	.	1 gal.

thus producing about what we now speak of as 2.2.7., that is 2 per cent. fat, 2 per cent. proteids and 7 per cent. sugar. This

formula was not considered ideal, but was easily prepared and seemed to answer well. It was dispensed in eight-ounce bottles.

Later, on the advice of Dr. A. Jacobi, there was added a one-half dilution of milk with barley water which was sweetened with cane sugar according to the following formula:

Table salt,	. . . . .	$\frac{1}{4}$ oz.
White cane sugar,	. . . . .	10 oz.
Milk,	. . . . .	1 gal.
Barley water,	. . . . .	1 gal.

This was dispensed in six-ounce bottles.

The six-ounce bottles of both the prepared milks were sold at one cent each. The eight-ounce bottles of pure milk were sold at one and a half cents each.

The same method of pasteurization is now carried on and the same price is now charged for the milk.

During the summer of 1893, 34,000 bottles were sold; during 1894, more than 300,000, and during both 1895 and 1896, more than 600,000, while in the five seasons this charity has been in existence, it has distributed more than 2,000,000 bottles. More than 7,000 bottles have been distributed in a single day.

It has been suggested that this undertaking should not be a charity, but that enough should be charged for the milk to make it self-supporting. I understand that if this were done, a considerably increased charge must be made for the prepared milk, thus making the cost of feeding an infant so much greater that it would undoubtedly put it beyond the reach of many of those who may now use it.

That such a charity has done good and has to some extent affected favorably the infant mortality can scarcely be doubted. If for no other reason it must do good by replacing improper foods. As a matter of fact the death rate of New York has diminished markedly since this charity has been in existence, undoubtedly owing largely to the increased efficiency of the Board of Health and the Department of Street Cleaning. In 1892, the death rate from all causes was 25.95, while in 1896, it was 21.52. How much of this improvement was due to the foregoing and how much to other agencies it is difficult to say. It has seemed to the writer, however, that if the statistics should show a more marked diminution in deaths in the classes of children under five years of age, and those dying from diarrhœal diseases during July and August (the months in which most of the



milk is distributed), of those years when a large amount of the milk has been sold, that then one might attribute this diminution somewhat to the Straus milk.

I have therefore gone over the New York Board of Health statistics for July and August for the three years preceding 1893, and have compared these with the statistics for the three years following 1893. I have thus omitted 1893 from the calculation, it being a year when some of the milk was distributed, but not enough to have a marked effect.

TABLE PREPARED FROM THE STATISTICS OF THE NEW YORK BOARD OF HEALTH, SHOWING A COMPARISON OF THE TOTAL DEATHS IN CHILDREN UNDER FIVE YEARS OF AGE, AND ALL DEATHS FROM DIARRHŒAL DISEASES DURING JULY AND AUGUST, 1890, 1891 AND 1892, WITH THOSE OF JULY AND AUGUST, 1894, 1895 AND 1896.

MONTHS OF JULY AND AUGUST IN THE YEAR	POPULATION	TOTAL DEATHS	DEATHS IN CHILDREN UNDER FIVE YEARS	DEATHS FROM DIARRHŒAL DISEASES
1890 . . . .	1,626,000	5,586	4,110	1,834
1891 . . . .	1,680,796	7,909	4,228	1,968
1892 . . . .	1,801,739	9,054	4,863	2,320
1894 . . . .	1,925,562	7,863	4,119	1,750
1895 . . . .	1,995,000	8,305	4,585	1,896
1896 . . . .	1,995,000	8,711	4,127	1,616
1890, 1891, 1892	. . .	22,549	13,201	6,122
1894, 1895, 1896	. . .	24,879	12,831	5,262
		+2,330	- 370	- 860

From the appended table it will be seen that while the total number of deaths in 1894, 1895, and 1896, exceeded those of 1890, 1891 and 1892, by 2,330,\* the deaths in children under five years were less by 370, and the deaths from diarrhœal diseases less by 860.

These facts correspond very well with those deduced by Dr.

\*The apparent paradox in the statement that the death rate diminished while the total number of deaths increased, is explained by the fact that the population of the city had increased.

S. E. Getty,\* from a very careful study of the effect of a pasteurized milk charity at Yonkers, New York, on the infant mortality of that town.

While these facts seem an encouraging indication it is not intended to draw any definite conclusions. Possibly other agencies have contributed to this striking result. It seems, however, that the Straus milk must have been at least an important contributing factor and possibly one that has been underestimated.

205 WEST FIFTY-SEVENTH STREET.

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**Purulent Ophthalmia Neonatorum.**—Chartres (*Arch. Clin. de Bordeaux*, No. 12, 1896) has made bacteriological examinations of the pus from twenty-six cases of ophthalmia neonatorum, and has found very numerous pathogenic microbes. In 36 per cent. of the patients there were gonococci alone; in other instances there were Loeffler's bacilli (12 per cent.), micrococci (12 per cent.), streptococci (8 per cent.), gonococci with streptococci (8 per cent.), and in yet other cases there were mixed germs. The worst instances were those in which there were streptococci either alone or associated with gonococci or the bacilli of Loeffler. Such cases ended in loss of vision, or were complicated by a fatally terminating bronchopneumonia. When the gonococcus alone was found in the pus the prognosis was generally good, treatment resulting in cure. It is easy, therefore, to see that from the point of view of prognosis the bacteriological examination of the discharge at an early stage of the disease is of great importance. The treatment must be energetic from the first, and it ought to be mixed. The author does not deal in this paper with the prevention of the disease, but he remarks parenthetically that while Credé's method is good, care during labor is better still. When the disease is present, the first step must be the thorough washing of the eye with a solution of permanganate of potash, so as to reveal the state of the cornea. Chartres then cauterizes with nitrate of silver on two or three successive days, with frequent eye washing with a solution of boracic acid in the intervals.—*British Medical Journal*.

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\**New York Medical Journal*, October 9, 1897.

# METHODS ADOPTED BY THE BOARD OF HEALTH OF ROCHESTER, N. Y., TO SECURE BETTER MILK FOR INFANTS.

BY G. W. GOLER, M.D.,  
Health Officer, Rochester, N. Y.

Realizing the higher duty of parents to their infants, the Rochester Health Department has in a small way initiated an educational movement in favor of the rights of early childhood. In our city the death rate in children under five years of age is more than 25 per cent. of the total death rate from all causes. A brief study of this high rate leads to the belief that it indicates a high disease rate at a most important period of life, when habits are being formed, organs rapidly developed in weight and size, and when the physical character of the child is being moulded for use in after life. The two chief factors that operate in producing this large infant morbidity and mortality rate seem to be the want of training in parents for the duties and responsibilities of maternity and paternity; and a milk supply, much of which comes from poorly kept cows, and most of which is not handled so as to give a clean product that is safe to feed when Pasteurized, and may even be of questionable value when sterilized. Such milk handled in the usual way contains from 100,000 to 1,500,000 bacteria per c.c. If such milk be subjected to the Pasteurizing or sterilizing process, what effect does either of these processes have upon the excretory products—toxines, etc.—of the bacteria contained in such milk? Does even sterilization inhibit the activity of these poisonous products? If to such milk as food we add the careless way in which most children are cared for, the half cleaned bottles and nipples, careless feeding, the minimum of water used both inside and outside the body, and the general lack of attention to ordinary bodily habits, is it not to be wondered at that so many children survive the ordeal through which they have to pass during the first year of life?

The Rochester Department has sought to overcome both of these difficulties. The first, by printing for free distribution a little eight-page pamphlet—"How to Take Care of Babies in Hot Weather"—in English, German, Italian, and Hebrew, giving concisely simple information under the headings: "Air," "Food and Water," "Sleep," "Clothing," "Bathing." In this pam-



phlet it has recommended the plan of feeding devised by Siebert, somewhat modified, as originally described in the *New York Medical Journal* of October, 1889.

The knowledge that we had to distribute through these pamphlets, if it would go where it would do the most good, must in some way find means to attract those most in need of it, and we tried so far as possible to find teachers who would be capable of explaining and demonstrating the method of work and the value to be had from it when carefully carried out. We, therefore, established on the 13th of July, a milk depot in one of the most populous districts of the city, where we supplied milk in nursing bottles ready for feeding after the plan of Siebert, slightly modified to meet the small fund available for this purpose. For this depot we had a large, light, newly papered, clean store with counters dividing it in half. In the rear of the counter, a long work table, gas stove, large sink, and large refrigerator were placed. A supply of four and eight ounce nursing bottles and corks, together with an Arnold sterilizer capable of holding six dozen bottles and the necessary cleaning appliances, *et cetera*, completed our outfit. At this depot is stationed a nurse, whose services were donated by the Rochester City Hospital. A woman to wash bottles assists the nurse.

The milk is received from cows that have passed the tuberculin test and who are daily groomed, well fed and watered, and their udders well washed. The cows are weekly inspected by our milk inspector. The milk is received in squat twelve quart cans belonging to the department. These cans are sterilized for forty-five minutes in the steam sterilizer and then sealed; around them is placed a wide rubber band and a sterile paper envelope containing two squares of sterile cheese cloth sufficient to cover the mouths of the cans. Through one of these cloth squares the cow is milked directly into the sterilized can. When the milking is finished, the first piece of cloth is thrown away and the second piece placed over the mouth of the can while the can is placed in ice water to cool. When the milk is received at the depot it is immediately prepared, pasteurized and put up in bottles as indicated in Siebert's table.

When a mother comes to the depot for milk, the nurse talks to her and advises her about the general care of her child, using the little pamphlet as a guide. If the mother is nursing the child, the nurse endeavors to have her continue to do so, if the age,

weight, and general development of the child seem to indicate that it is best. If the child is a bottle fed child, the nurse weighs the child and in the absence of any direction from the physician, directs the mother how to feed it. The milk is sold in nursing bottles only, at a uniform price of about two cents per pint, the cost of the milk. No milk is sold by measure. Milk is only sold after the weight and general development of the child has been observed by the nurse.

About August 1st, the second depot was established in charge of a nurse, whose services were donated by St. Mary's Hospital. From these depots about 8,000 bottles of milk have been sold. Many people in good circumstances have availed themselves of the opportunity to secure good, clean, Pasteurized milk for their children.

The desire upon the part of the Health Department has not been to furnish prepared milk at cost, and thus make many mothers more helpless than they now are, but it has been to furnish them with necessary information in a handy form, and to give them the benefit of a teacher-nurse who could tell them about feeding and the habits of their children, and so far as possible to teach that mothers should nurse and care for their children.

Notwithstanding the care taken to sterilize the milk cans, the bottles, corks, and everything that could possibly come in contact with the milk, the difficulties in procuring a clean milk supply were very great. When our milk station was started, one of the most intelligent and painstaking milk producers in this section was asked to supply us with milk. Specific directions were given to him as to just how the milk should be put into the cans. Our cans, after they were sterilized, closed and sealed, were to be sent to his dairy. The cows were to be washed, and milked directly into our cans; the cans were to be covered with a double thickness of dairy cloth and placed in ice water to cool. We found upon examination that these directions were not being carried out. The cows were being milked into the milkman's own cans, the milk put into a cooler, stirred with a piece of broomstick, poured into our cans, which were allowed to stand open, and sent to our milk depot for distribution. Some of the milk that came to us was absolutely bad. Upon finding this state of things we immediately stopped getting milk from this man, and upon advice of our milk inspect-

ors selected a man whom they thought, out of all the milk producers sending milk into the city of Rochester, would be the man best calculated to give us a good, clean milk supply. Our further observation proved that this was not so. Inspections by our milk inspectors of this stable showed that the milkmen were milking with dirty hands into their own pails in a dusty stable; that they were leaving our sterilized milk cans open, and upon several occasions we received milk with a dusty, cowy taste, and on one occasion milk that was sour.

These experiences have taught us that the only way in which we can secure a good milk supply for little children is to rent our own cows, rent a stable and pasture for the season, and produce our own milk under conditions over which we have absolute control. Next year we hope to rent such a stable, to tear out the old portion of it, drain it, put in a good floor, clean and whitewash its ceiling and sides, ventilate it properly, fence off a milk room, whose floor shall be kept as clean as the cleanest of kitchen tables. Clean handed employees in white duck uniforms will care for the cows and milk them in the stable. Into this milk room our cows will be driven to be milked into sterilized cans, and out of the room the milk will be immediately covered, cooled and sterilized. In this way we will not only furnish a good, clean milk supply, but we hope that our stable will be a standing example to every milkman and every milk producer of what can be done at a little cost for the production of a clean milk supply.

The following table shows the number of deaths in Rochester, under five years of age, for the months of July and August, for the past eight years.

July: Under 1. From 1 to 5. August: Under 1. From 1 to 5.

1897,	43	7	48	13
1896,	108	18	59	17
1895,	92	16	56	11
1894,	82	18	72	29
1893,	99	16	85	19
1892,	101	26	104	34
1891,	81	15	93	17
1890,	90	18	94	18



# Clinical Memoranda.

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## AN ACCIDENTAL VACCINATION.

BY WILLIAM S. GOTTHEIL, M.D.,

Professor of Dermatology, at the New York School of Clinical Medicine;  
Dermatologist to Lebanon Hospital, the West Side German, and  
Northwestern Dispensaries.

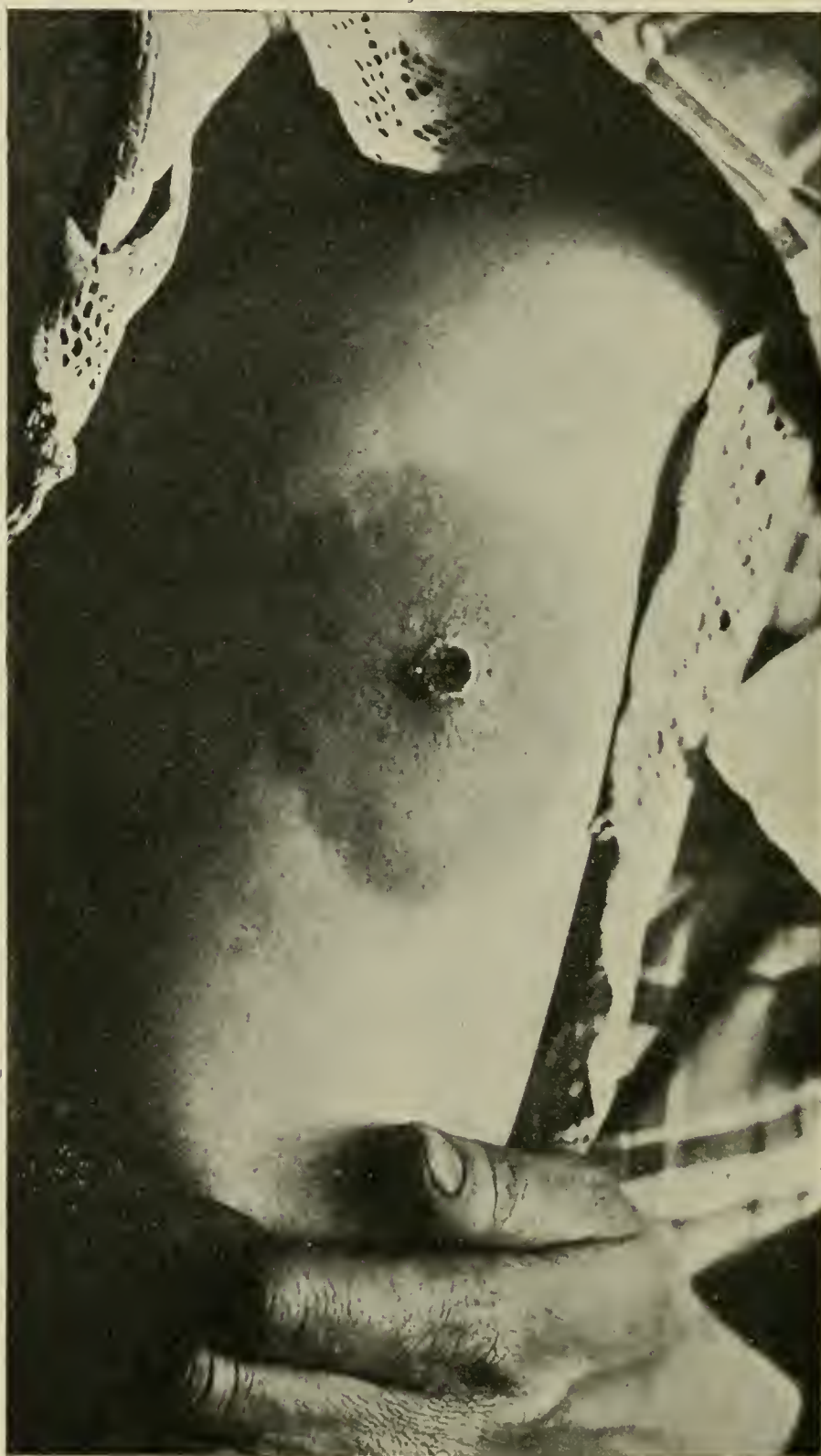
The following case is of some interest, inasmuch as it is an effective argument for greater care in the practice of vaccination than is often exercised, and for greater hesitancy in pronouncing an individual "protected" after one or two unsuccessful attempts at vaccination.

Emma W., four years old, unvaccinated until her second year, had never suffered from any contagious or febrile disease. Two years ago she was vaccinated by an official of the Board of Health, with a negative result; and the vaccinator did not think it necessary to try again. A year later, in the spring of 1896, she was again vaccinated by the Board of Health, with the same result. No further attempt was made, and I can only conclude that she was thought to be adequately protected.

On May 1st of this year, Emma's baby brother, nineteen months old, was successfully vaccinated by a Board of Health doctor. There was evidently a mixed infection in this case, for when I saw the arm later in the month, the swelling was very marked, involving the entire upper half of the limb, with lymphangitis, and with a deep ulceration larger than a silver dollar in size. At the date of the present writing, May 9th, the ulceration is little more than half healed up.

On May 8th, a pimple was noticed on Emma's right thigh, and when she appeared at the clinic, on May 19th, there was a perfectly typical vaccination pustule at the side. This is well shown in the accompanying photograph. Here, also, there was a mixed infection; but the inflammation and breaking down was not as great as in the case of the baby, and now only an ulceration, the size of a ten cent piece, and covered with a scab, is left.

Very evidently this was a case of accidental inoculation, such as is quite liable to occur in families living under the conditions



A CASE OF ACCIDENTAL VACCINATION.

that our tenement house population are subjected to. I was unable to ascertain the exact mode of inoculation; it was probably by means of the finger nails by scratching, after contamination with the secretion from the baby's arm.

The interesting point is: Why didn't the two previous vaccinations take in an unvaccinated child? The only conclusion possible is that either the virus, or the method of the vaccinator, was at fault. That the child was susceptible is shown by what I have recorded.

144 WEST FORTY-EIGHTH STREET, NEW YORK.

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## HYDATID CYSTS OF THE LIVER IN A BOY SEVEN YEARS OLD; OPERATION; RECOVERY.\*

BY WM. FITCH CHENEY, M.D.,

Adjunct to the Chair of Obstetrics and Diseases of Women and Children,  
and Chief of the Children's Clinic, Cooper Medical College,  
San Francisco, Cal.

On March 31, 1897, a little Italian boy, seven years old, was brought by his parents to the Children's Clinic at Cooper Medical College. His symptoms were vague—occasional pain in the right side, headache now and then but not constantly, and during the week previous several vomiting spells. His appetite was reported to be fair, he slept well at night, and his bowels moved regularly each day, but his mother had noticed a swelling in the boy's right side about two years previous, which had never disappeared since its discovery, but rather had grown a little larger, and it was this that induced her to bring the child for examination.

He was a bright and intelligent-looking little fellow, with snapping black eyes and ruddy cheeks and lips. His face indicated perfect health, but his body and limbs were moderately emaciated. There was no icteric hue to be detected about his skin or conjunctivæ. The tongue was heavily coated with a yellowish fur. In the region of the liver a swelling was plainly perceptible on inspection. On palpation this swelling was found to extend downward as far as the level of the anterior

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\* Read before the San Francisco Medico-Chirurgical Society.



superior spine of the ilium, and inward to the median line of the abdomen. It was evidently somewhat tender to touch. Its outline was smooth, not nodular, and its consistence hard throughout most of its extent; but in one part, about three inches below the border of the ribs, the swelling was distinctly fluctuating. There was a sulcus or groove, perceptible to touch and sight, running across the right side of the abdomen just below the border of the ribs, apparently separating the mass below from the liver above. The lower border of the tumor was sharp and distinct, so that the examining fingers could easily be inserted beneath it, and it descended on deep inspiration.

On percussion, there was dulness over the area of swelling, directly continuous with the liver dulness above, but not extending to the lower edge of the tumor as perceptible on palpation; for tympany replaced the dull note across the lowest portion of the tumor, over a zone about two inches in width. The dulness extended to the median line internally and to the axillary line externally. Directly back of the axillary line and posteriorly toward the spine, a tympanitic percussion note was found, the dulness not extending in that region below the normal liver dulness. Auscultation showed the heart and lung sounds normal. The urine was examined and found normal in every respect.

Ordinary means of examination were supplemented in this case by the use of the X-ray, through the kindness of Dr. A. Abrams, who subjected the boy to this method of inspection at my request. The fluorescent screen showed very prettily the upper rounded border of the liver, rising and falling with each respiration, but it failed to give any idea of the relation of the parts below the level of the ribs, and therefore left the character of the tumor as much in the dark as before.

Finally it was decided to resort, as an aid in diagnosis, to puncture with a hypodermic needle at the point where fluctuation had been found. This was done, after preliminary freezing of the surface with rhigolene. The fluid obtained was turbid, and looked like thin pus. Under the microscope it showed many pus cells, but no hooklets of hydatids.

Plainly, the differential diagnosis concerned two organs—the liver and the right kidney. With regard to the liver, was this a malignant tumor, an abscess, or a hydatid cyst of this organ? With regard to the kidney, was it a sarcoma or a pyo-nephrosis?

Malignant tumor of the liver was excluded by the smooth contour of the swelling, the normal upper border as shown by the X-ray, the slow growth of the tumor, and the moderate emaciation and constitutional disturbance of the child. Liver abscess could not be so positively excluded; it is rare in childhood, but its main signs are those that were present in this case—enlargement of the liver, usually downward, with tenderness over the swelling, and its chief symptoms are gastro-intestinal—coated tongue, loss of appetite, and occasional vomiting. The symptom lacking from the clinical picture of liver abscess was fever, which was never found present in this boy during the time he was under observation. Nevertheless this condition was looked upon as one of the possibilities, especially after the hypodermic needle showed the presence of pus in the swelling. As for hydatid cyst of the liver, there was nothing to speak for it after the microscope failed to show hooklets in the fluid withdrawn by the needle. If this fluid had been clear, chemical examination would have been made for albumin and sodium chloride, even though no hooklets were found with the microscope, but its turbidity misled me, and this chemical examination for hydatid fluid was not undertaken. There was no characteristic fremitus on palpation, such as is supposed to be a diagnostic sign of hydatid cyst of the liver, and nothing in the symptoms pointed to this affection more than to another.

The argument in favor of the kidney as the point of origin of the tumor, rather than the liver, was the apparent line of demarkation between the lower surface of the liver and the tumor proper. There was a depression across the swelling just below the lower border of the ribs, which could be both seen and felt. Two other members of the clinical staff saw the case with me, and both considered the swelling an affection of the kidney rather than of the liver. One diagnosed sarcoma, the other pyo-nephrosis. The diagnosis of sarcoma of the kidney rested mainly on the fact that the tumor had pushed the bowel in front of it and therefore came probably from behind the peritoneum. The condition is not uncommon in childhood, and the character of the tumor it produces is not unlike that which this case presented. The diagnosis of pyo-nephrosis had as its basis the pus found on aspiration, and the chemical examination made of the fluid obtained, to determine whether it was urine. The addition of nitric acid, after partial evaporation of the fluid, gave

crystals which under the microscope strongly resembled those of nitrate of urea.

In any case it was evident that operation was necessary, and an exploratory incision would reveal the exact nature of the tumor, and determine the proper plan to pursue in its removal. This was, therefore, advised and consented to by the parents, and the boy was sent to Lane Hospital, where he was referred to Dr. Emmet Rixford, of the Surgical Clinic. An incision was made through the abdominal wall, on April 11th, by Dr. Rixford. It was then seen, at once, that the tumor involved the substance of the liver; but it was thought, from the surface appearance, to be an abscess of the liver, and the organ was, therefore, stitched to the edges of the incision, the wound packed with gauze, and the boy put back to bed to await the formation of adhesions before opening the abscess. The secondary operation was performed April 14th. On incising the tumor, instead of a gush of pus as expected, there came out thin, turbid fluid, and numerous transparent, glistening cysts, the size of grapes, that at once settled the diagnosis as hydatids. The cavity was washed out, and the wall of the mother cyst removed. This cyst, when distended, must have measured between four and six inches in diameter. After its removal there still seemed to be too much liver left for so small a boy. A long hypodermic needle was, therefore, passed from the cyst cavity upward into the liver, beneath the ribs, and with this there was withdrawn perfectly clear, transparent fluid. An incision was then made in the track of the needle, and another cyst, equally as large as the first, was evacuated of its contents of fluid and daughter cysts. Drainage tubes were inserted, the wound dressed and the boy put back to bed. He recovered slowly, but without any complication, and is now entirely well.

The purulent fluid obtained with the hypodermic needle before operation, came from the lower cyst, which had begun to suppurate. The upper cyst, lying beneath the ribs, contained the characteristic, clear fluid of hydatids. The groove across the swelling, which had proved such a stumbling block in diagnosis, was the depression between the upper and the lower cyst. The two were perfectly separate and distinct.

The intrinsic interest that this case possesses, from a clinical standpoint, is added to by the rarity of such an affection in children, especially in America. In the latest text-book that we have



on diseases of children, Dr. L. Emmett Holt says:\* “Echinococcus disease of the liver, while rare among adults in this country, is almost unknown in children. I have been able to find but two recorded cases in America.”

906 POLK STREET.

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**School Diffusion of Diphtheria.**—In a recent report to the London County Council, Shirley Murphy shows in a very striking manner the relation of the autumnal increase of diphtheria to the school population. Taking three periods of four weeks before vacation, the four vacation weeks and the four weeks after vacation, he finds a remarkable reduction in the vacation period from the ante-vacation period, followed by a still more remarkable increase in the post-vacation period. In 1892 this reduction was 3 per cent., and in 1893 it was 27 per cent. The increase in 1892 was 29 per cent. and in 1893 it was 81 per cent. It is to be especially noted that there is no such constant and marked relation discoverable in other age periods, but that it is confined to children of the elementary school age—in that country between three and thirteen years. There is, of course, some decrease and some increase at other ages, but this may be fairly attributed to lesser or greater infection derived from and secondary to the school cases.—*Journal of the American Medical Association.*

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**Vaccine Immunity.**—Beumer and Peiper (*Berl. Klin. Woch.*) observe that the active agent in vaccine still remains undiscovered, and yet its microparasitic character is hardly contested. A protective action is induced by the inoculation. The duration of this protection varies according to different observers from six to seven up to ten years. Analogy with other diseases would suggest that protective bodies are developed in the protected individuals. The authors then refer to the recorded researches into this subject, where an attempt has been made to immunize animals by using the serum obtained from already vaccinated animals. The results have, however, been discordant. The authors have themselves made a series of experiments, chiefly on calves, in which they have used the blood serum or defibrinated blood of vaccinated calves, but with negative results. They conclude that in the blood of vaccinated calves no protective bodies are to be found which can confer immunity upon other calves, or that these bodies exist in such small quantities that any practical application appears to be excluded.—*British Medical Journal.*

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\* Diseases of Infancy and Childhood, p. 414.

## Occasional Periscope of Teratology.

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BY J. W. BALLANTYNE, M.D., F.R.C.P.E., EDIN.,

Edinburgh.

**Souques, A., and Marinesco, G.: Lesions of the Spinal Cord in a Case of Congenital Amputation of the Fingers.** (*Compt. Rend. Hebd. de la Soc. de Biologie*, 10.s., iv., 434, 1897).

In connection with the theory of the spinal origin of hemimely referred to above, it may be interesting to note that Souques and Marinesco have recently examined (by the methods of Weigert-Pal and Marchi) the spinal cord of an individual who had congenital amputations of the index, middle, and ring fingers of the right hand.

Notwithstanding these congenital anomalies the patient, a woman, lived to the age of sixty, when she succumbed to cancer of the uterus. At the level of the first dorsal and eighth cervical spinal nerves the cord showed a very evident right-sided hemiatrophy. At first sight this appeared to affect all the constituent parts, but further examination showed that the parts specially interested were the gray substance and the posterior columns. The extra-medullary posterior roots, on the amputated side, were much diminished in size, without any evident proliferation of the interstitial tissue. Both the internal and external bundles of the intra-medullary posterior root were reduced in size. The reflexo-motor collaterals were more compact and less numerous than on the healthy side. The collaterals of the posterior horn were also reduced in number. The gelatinous substance of Rolando was atrophied *en masse*. The anterior roots were also atrophic. The anterior horn of gray matter was less than normal by about one-third, and it was very pale. With regard to the motor cells the antero-internal group was well preserved, the postero-lateral was in part atrophied, and the median group had entirely disappeared. The cells, also, situated between the anterior and posterior horns, and corresponding to the cells of the column of Clarke, were diminished in number. The atrophy of the posterior column was very distinct, and the part most affected was the posterior root zone. There was also a bilateral degeneration of the columns of Goll. At the level of the fifth, sixth and seventh cervical nerves these alterations were

all less marked, but the atrophy of the column of Burdach persisted, and at the level of the fourth cervical this lesion was the only one left, and it could be followed up to the medulla oblongata. The parts, therefore, which showed the atrophy most were the reflexo-motor collaterals, and the collaterals of the posterior horn, and this proved that they were the expansion of the exogenous system. Their atrophy explains, in part, the diminution in size of the posterior horn, and the atrophy of the reflexo-motor collaterals along with the disappearance of the nerve cells of the anterior horn, explains the small size of that horn. In the column of Burdach it is easy to understand the atrophy of the posterior and middle root zones, for both these zones contain a considerable number of exogenous fibres coming from the posterior roots. As to the atrophy of the anterior root zone, there is a double mechanism, for it contains exogenous fibres and also fibres of the cells of the cord, which were in this case partially atrophied. The atrophy of the nucleus of Burdach is the consequence of the alterations in the long fibres of the posterior roots.

The authors regard these changes as associated with the congenital amputations. It is known that section of a nerve causes distant lesions in the centre of origin of that nerve. These reaction lesions, if they are perpetuated, act probably in their turn on the prolongation of the neurone. It is thus easy, in the case referred to, to understand the atrophy of the first sensory and the first motor neurone. With regard to the changes in the intra-medullary neurone of the second order (cells of the cord) it is necessary to remember the part played by functional stimulations: the primary sensory neurone being affected, the stimulations of the neurone of the second order are diminished, and atrophy follows. Perhaps the bilateral degenerative lesion of the columns of Goll was due to the cancerous cachexia.

**Cerda y Coll, José: Two Teratological Cases.** (*Revista Balear de Ciencias Médicas*, xiii., 193, 1897.)

Even the Balearic Islands are not free from teratological occurrences! Dr. José Cerda y Coll has recently communicated to the Medico-Pharmaceutical College of Palma de Mallorca the report of two interesting monstrosities. The first was an instance of thoracopagous twins, which had reached the fourth



month of intra-uterine life and been expelled as an abortion. They were of the male sex, and had two heads, necks and pelves, but in the regions of the thorax and upper abdomen there was fusion together of the two trunks. There was a single umbilical cord. The extremities were well formed. The specimen was not dissected, as it was wished that its external appearance should be preserved, but from the presence of a single umbilical cord it was supposed that there existed a single heart, liver, etc. The second case was that of a twin born along with a healthy living female infant. The face and forehead were wanting, the vertebral column was contorted, and there was no trace of upper limbs. Where the face ought to have been, was a rudimentary external ear. At the left side was a completely developed lower limb, being that, however, of the right side, while on the right side was a rudimentary appendage. Between the two was a projection which, in the author's opinion, indicated male genital organs. [This is very unlikely, for the well-formed twin was a female, and in such cases the monster is always of the same sex. Possibly the projection indicated the undifferentiated genital tubercle.] The umbilical cord was inserted near the upper end of the foetus, a little below the supposed ear. It was not definitely known, but it was thought that there had been only one placenta. The mothers in both cases were healthy, without cancerous ancestors, and there was no history of alcoholism. Other causes being excluded, the author is forced to ascribe the first case to some moral impression on the mother, and the second to the pressure of one twin upon the other. [The second case was doubtless an instance of allanto-angiopagous twins, of which one was either a foetus acephalus or a foetus paracephalus. These I have fully described elsewhere, *e.g.*, *Teratologia*, I., 158, 1894. J. W. B.]

**Giglio, G.: Antenatal Diagnosis of Anencephaly and Derencephaly.** (*Annali di Ostetricia e Ginecologia*, xix., 328, 1897.)

In most instances the diagnosis of the presence of a monstrosity before birth is a matter of probability only. Hydramnios, serous infiltration of the subcutaneous tissue, the transitory presence of albuminoid principles in the urine, and irregularity in the foetal movements, along with the history of syphilis and pre-existing renal disorders, all go to constitute a diagnosis of

probability. Giglio, however, points out that in the case of brainless foetuses, with or without the spinal cord, another symptom can be elicited which will aid diagnosis. This is the character of the foetal heart sounds, which are weak, uncertain, now with long intervals, and again in rapid succession. Auscultation generally leaves a doubt as to the existence of the sounds. This peculiarity is ascribed to the defective innervation of the foetal heart in such monstrosities, for even if the cardiac plexuses and their branches exist, the cerebral centres and generally also the spinal ones are certainly absent. This symptom, in conjunction with careful abdominal palpation, which reveals the absence of the cranial vault, will be of great service in the antenatal diagnosis of the anencephalic monstrosity. The rest of the paper is occupied with the mechanism of labor in such cases, and need not be considered here. The Italian school of observers deserves great credit for its strenuous efforts in the direction of the establishment of the principles of diagnosis of monstrosities still in utero. Villa, La Torre, Calderini, and Giglio himself have all made advances in this department of teratology.

24 MELVILLE STREET.

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### **Spontaneous Straightening of Rickety Curvatures of the**

**Leg.**—Kampe (*Bruns' Beitr. z. Klin. Chir.*), using the material of the Tübingen Clinic, concludes that (1) the greater number of all cases undergo spontaneous cure. Of the author's, all severe, 75 per cent. were cured, 15.3 per cent. improved, and only 9.7 per cent. remained *in statu quo*. (2) The process of spontaneous straightening lasts usually two to four years. If the curvatures begin in the first or second year of life the legs are quite straight by the fourth or fifth. (3) If the curvatures are unchanged by the sixth year spontaneous cure does not take place at all. There are always cases of most severe general rhachitis. (4) The chief aim in treatment is to improve the general health so as to strengthen the muscles. In Kampe's experience, as soon as the disease is past the acute stage, being about on the legs is not detrimental, but, on the contrary, helps the cure. Orthopædic treatment by plaster-of-paris, splints, etc., is not necessary. Osteotomy is indicated only when the curvatures persist after the sixth year.—*British Medical Journal*.

# ARCHIVES OF PEDIATRICS.

DEVOTED TO THE

DISEASES OF INFANTS AND CHILDREN.

NOVEMBER, 1897.

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## THE ARTIFICIAL FEEDING OF INFANTS: ITS PRESENT STATUS.

The series of papers in the present number on milk as an infant food and the milk supply of cities was arranged with three objects in view: First, to reiterate the belief now held by every pediatric practitioner of experience that cow's milk, all things considered, proves in the end the best artificial food for infants; second, to consider the objections, real and imaginary, that have been urged against its use; third, to demonstrate the fact that these objections may be so completely overcome that sound, safe and wholesome milk may be obtained in any place.

In the first of these papers, Dr. Holt reviews, in a most satisfactory manner, the various foods that have been proposed as substitutes for breast-milk—the infant's natural food. He admits that there are certain objections to the use of cow's milk, but they are far less important than the objections to any other artificial food. We must admit that there can be no artificial food wholly free from objections. It is well to understand at the outset, also, that prescribing milk involves more knowledge and thought on the part of the practitioner than does the use of many other foods. But the practitioner who refuses to do the best in his power for his patient, simply because it makes him more trouble and involves more thought, had better drop medicine



and seek some other calling. Two things are certainly believed with great unanimity by experts: first, that cow's milk, properly modified, is in its immediate and ultimate results the best artificial food for infants; second, that its use demands careful study and much thought on the part of the practitioner. The practitioner should fully appreciate the fact that the successful feeding and rearing of infants cannot be accomplished by haphazard methods and a blind trust in luck, but depends rather upon carefully considered methods adapted by painstaking study to the individual case.

The subject of infant feeding has reached a stage of exactness in this country that has been attained in no other. Dr. Holt is quite correct in his statement that the methods of feeding adopted in other countries are crude compared with those that have been developed in this country. This is certainly a cause for just pride on the part of the profession in America. But we must acknowledge that we are still far from perfection and from that exactness which farther labors may attain. And we must acknowledge, also, that the rank and file are far behind the leaders.

Among those who have been foremost in securing the degree of perfection already attained, none have been more active or have accomplished more than Dr. Rotch. His work in developing and perfecting the modified milk idea has resulted in placing infant feeding upon a basis of exactness which it had never before occupied. His paper describing the exact meaning of modified milk, what it really is, and what it is expected to accomplish, will be read, therefore, with the greatest interest. It should be understood that the laboratories, while of the utmost value in securing accuracy in feeding, and institutions which cannot be spoken of too highly, are nevertheless not a strict necessity in carrying out the modified milk idea. In other words, a practitioner may modify milk very accurately upon a scheme of percentages, who has not access to a laboratory. The use of percentages in infant feeding is so satisfactory and gives the prescriber the feeling of so much greater certainty in

his work, that we would urge the adoption of this method upon the general practitioner. By the use of the most recent text-books upon pediatrics, the practitioner, who is willing to study, may place the feeding of his infant patients on almost as exact a basis as his medical prescribing. He does not expect that every prescription he writes will infallibly accomplish the desired result, and he must not expect that his milk prescriptions will always be more certain in their results. In fact, experience, as in all departments of medicine, will prove of great assistance in adapting his milk prescriptions to his patients. But the attempt to feed the infants under his care by exact percentages will certainly prove more satisfactory than the methods now largely in vogue, of mixing food without any knowledge as to the proportions of its various ingredients.

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#### PURE MILK IN CITIES.

A portion of this series of papers is designed to show that it is perfectly feasible to secure clean and wholesome milk in any town. If such milk can be secured in New York, Boston, Philadelphia, Newark, Buffalo, Rochester, and Yonkers, towns varying in population from two million to twenty thousand, it can be secured in any town. The towns mentioned are by no means the only ones that have made radical improvements in their milk supply, but these have been particularly successful in their attempts in that direction.

The first and most important attempt to secure *certified* milk was made by Dr. Coit in Newark, and the system there adopted has been to a large degree the model upon which other cities have worked. It will be seen by reading these papers that the aim in each place has been somewhat different. Some of the cities have endeavored to secure simply a pure and wholesome milk, known as *certified* milk. Others have made certain attempts at modification, while in most places the milk is pasteurized. It is noticeable, also, that in many places the primary

object has been to supply better milk to the poor, who are least able to secure suitable milk for their infants. This is entirely in keeping with the Good Samaritan instincts so common in the medical profession.

The good that has been accomplished by this work is incalculable. The Straus milk has unquestionably been the most important factor in the reduction of infant mortality during the past few years in New York. The results in other places have been equally good in proportion to the magnitude of the work.

It is a noticeable fact that these various movements for securing a better milk supply have in all cases originated with one person. In Buffalo an earnest and philanthropic woman inaugurated the movement, but one aggressive, determined physician has usually been the mainspring of the work. By his earnestness and persistence he has secured the co-operation of others, until the movement has attained sufficient strength to accomplish the wished-for end. It is hoped that this series of papers, showing what has actually been accomplished in various places, will be an incentive to other physicians to start crusades in other towns.

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#### COLLECTIVE INVESTIGATION OF INFANTILE SCURVY.

We wish to call attention to the announcement on the last page of the present number, of the Committee of the American Pediatric Society for the Collective Investigation of Scorbutus in Infants. The subject is a most important one, for the disease is without question increasing in frequency, although it is entirely preventable, and, if unrecognized and untreated, is very fatal. It is important, therefore, that it should receive careful study and that its various manifestations should become thoroughly understood. It is important, also, that the general practitioner should fully understand not only the early symptoms of the disease, but also its causes and the readiness with which it may occur in his own practice.

This the collective investigation will accomplish if properly



supported by the profession. The membership of the Committee is ample warrant that the work will be done faithfully and well, and that the conclusions to be drawn from the evidence will be stated without fear or favor. It is to be earnestly hoped that every practitioner, who has seen the disease, will communicate with one of the members of the Committee and procure blanks, thus adding his share to the elucidation of a disease which in certain regards is not yet fully understood.

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### PEDIATRICS IS THE SPECIALTY OF THE GENERAL PRACTITIONER.

In the Queen's Commemoration Number of the *British Medical Journal*, one of the headings of the paper upon progress in diseases of children during the Victorian age is as follows: "The Specialty of the General Practitioner." Under that section we find the following: "It has been said, with what truth we shall not pretend to say, that 'pediatrics is the specialty of the general practitioner.' Certain it is that the treatment of the diseases of children constitutes no small part of general practice, and a part the importance of which has been steadily growing in the eyes of the public."

The ARCHIVES is pleased to know that a statement which first appeared in one of its own editorials should receive notice and evident sanction from so high an authority. The frequency with which the expression has been used of late, is ample demonstration that pediatrics is, indeed, the specialty with which the general practitioner is most concerned.

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### VOLUME XV.

With the beginning of a new volume the ARCHIVES will enter upon its fifteenth year. Its steadily increasing prosperity during the year that has almost passed, offers the most encouraging prospects for the year to come. Not only have its material inter-

ests improved, but we believe that its literary and scientific standard has been advanced also. It is not, however, the intention of either editor or publisher to rest content with that which has been accomplished in the past, but to make every effort to render the journal a still more perfect exponent of what is best and highest in pediatrics, a position which it occupies alone in the English language.

The journal will continue to be restricted exclusively to the diseases of infants and children. In this particular, also, the ARCHIVES OF PEDIATRICS stands alone in the English language as a *strictly* pediatric journal.

In speaking of the functions of a pediatric journal, some time since, we expressed the belief that an important aim should be the education of the profession at large in the department which it represents. It should constantly strive to place the knowledge which is being continually accumulated by skilled observers, in such form as to be most available for practical use. The pediatric journal, therefore, while classed as a *special* journal is in the fullest sense of the term the general practitioner's journal, for it is he who is the medical attendant of the vast majority of infants and children.

In the editorial management of the ARCHIVES, these facts are constantly kept in mind, with the aim always in view of making a journal which shall be a medium of communication between those who work in laboratories, or study the diseases of children in great hospitals and their pathology in the *post-mortem* room, and the general practitioner, so that the constantly increasing knowledge of disease may be at once applied in the treatment and management of the sick.

## Current Literature.

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### HYGIENE AND THERAPEUTICS.

**Symes, Langford : The General Management of Diarrhœa.**  
(*Dublin Journal of Medical Science.* 1897. No. ccciii.)

Keep the child warm; wrap up the legs and arms in cotton wool; place hot bottles round the child in bed: apply a wool jacket and a flannel binder. This heat is of the first importance. Normally our main loss of heat is through the skin, and the smaller the animal the greater proportion is there of superficial area to body-weight, and therefore the greater the loss. In small children, then, all heat must be preserved, and especially when diarrhœa exists. See that the nurse is scrupulous in her cleanliness. Clean, dry napkins must be constantly on hand and applied; the bed must be level, smooth, and fresh linen put on the moment it is required, and the child should lie in a dry, warm, clean cot, with the cleanest of clothes around it.

Procure all the rest possible. Relieve eruptions, irritations, excoriations, by suitable powders, as oxide and carbonate of zinc, with a little boric acid, or a weak carbolated solution of subacetate of lead. Carefully attend to the mouth. Daily cleansing will be necessary to remove fungi of thrush, if present. Glycerine of borax, diluted peroxide of hydrogen (2 per cent.), or salol in glycerine, are excellent applications.

**Chaunier : Betanaphthol-Bismuth, as an Intestinal Antiseptic.** (*Jahrbuch f. Kinderheilkunde.* 1897. B. xlv., H. iii., iv.)

The drug was given in all the forms of diarrhœa in children. The diet was not changed in many cases. In a few it was combined with one quarter to one-half drop tincture opii.

In cholera infantum and diarrhœa with frequent vomiting, the usual diet was discontinued, and egg-water alone was given. The results were satisfactory in all. The fœtid stools lost their odor. The thin stools became thicker, and the green ones regained their normal color.

Under the influence of the betanaphthol-bismuth, the disease responded rapidly, and permanently. There is no danger attached to the administration of this drug, during the first months of life, from two to three grammes being given daily in solution, syrup or honey.



**Bryant, Percy : Epilepsy and Its Treatment.** (*Hospital Bulletin of the State of New York.* 1896. Vol. i., No. 4).

After considering the various peculiarities of epilepsy and the various indications for treatment, the author concludes as follows:

1. Intestinal toxæmia developing in the epileptic, results in exciting the various psychical manifestation of epilepsy.

2. Simple idiopathic epilepsy possibly has its origin in the accumulation in the system of some proximate principle, which, under extraordinary circumstances, exhibits toxic properties, and thus periodically excites convulsions.

3. The effect of the milk diet treatment upon epilepsy, if sufficiently long continued, results frequently in diminishing the number and severity of the convulsions, and tends eventually to improve the physical condition of the patient.

4. The harmful effects resulting from the long continued use of the bromides in epilepsy more than counterbalance the apparent benefits.

5. The epileptic tendency probably depends largely upon a susceptible though otherwise healthy nervous system, which is unable to offer normal resistance to irritation.

**Sanger, Frank D. : Prognosis and Treatment of Pertussis.** (*Annals of Gynecology and Pediatrics.* 1897. Vol. x., No. 10.)

After reviewing this important subject very carefully, the author reaches the following conclusions:

Children under one year of age are particularly susceptible to pertussis, especially strumous and debilitated infants, and infants artificially fed.

The younger the child, the greater the mortality, pertussis ranking as one of the most fatal diseases under one year of age.

The delicate lung tissue of infants who survive an attack of pertussis may be irreparably damaged.

It is, therefore, of utmost importance that very young children be protected from contagion; this is best accomplished by removing them from the house where there are infected individuals, or, when this cannot be done, by as rigid isolation as can be accomplished in the home. In order to protect the young, diagnosis must be made early by careful attention to history,

character of cough, appearance of face, apprehension, vomiting, temperature, and examination of the chest.

Attention to the hygienic surroundings of the patient, and careful nursing and feeding are of great importance.

Pertussis is a self-limited disease, for which there is no specific remedy, or class of remedies. To ameliorate the distressing cough, diminish the number and severity of the paroxysms, and check excessive vomiting are the chief indications.

By diminishing the number and severity of the paroxysms, the danger of complications which are largely mechanical, is minimized.

Cases should be watched closely, and the chest examined systematically, in order that complications may be discovered early and properly treated.

**Halsted, T. H. : Intubation Before and Since the Use of Antitoxin.** (*The New York Medical Journal.* 1897. Vol. lxx., No. 24.)

The author reports thirty-four cases of intubation done prior to the use of antitoxin. Of these twenty-six died, eight recovered—mortality, 76 per cent.; recoveries, 24 per cent. Mortality under five years, 70 per cent.; recoveries, 30 per cent.

Twenty cases are reported as having been operated upon in conjunction with antitoxin. Of these cases five died, fifteen recovered. Mortality, 25 per cent.; recoveries, 75 per cent. Mortality under five years, 30 per cent.; recoveries, 70 per cent. The average time during which the tube was worn in the cases which recovered was a little less than five days.

From his experience the author draws the following conclusions:

1. Laryngeal diphtheria, in any epidemic, is never mild, but has always had a mortality of from 90 to 95 per cent., reduced by operation, intubation or tracheotomy, to from 72 to 76 per cent.
2. The report of his cases shows a mortality of intubations without serum of 76 per cent.; in conjunction with serum of 25 per cent., and, eliminating cases of death within twenty-four hours of injection, a mortality of 10 per cent. The reduction of mortality from 76 to 10 per cent. is to be credited to antitoxin.
3. Antitoxin should always be administered as early as possible, and in laryngeal cases without waiting for the bacteriolo-

gist's report. If this is done it will usually prevent an extension to the larynx, or, if the larynx is already invaded, an early injection will frequently cure without need of operation.

4. No child should be allowed to die of laryngeal stenosis without an operation, preferably intubation, and serum should be injected at once, regardless of the stage of the disease, as most desperate cases often end in recovery.

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## SURGERY.

**Hall, Ernest : Radical Cure of Inguinal Hernia in an Infant Five and a Half Months Old.** (*Southern California Practitioner.* 1897. Vol. xii., No. 3.)

L. H., male twin, five and a half months old, suffered for few weeks with irregularity of bowels and intermittent and abdominal distension. The condition becoming suddenly aggravated, medical aid was requested.

The usual symptoms of strangulated inguinal hernia (right) were present. Under chloroform the bowel was replaced, a truss applied and the child's condition continued satisfactory until the morning of the fifth day, when the hernia reappeared. Taxis, under anæsthetic, having failed, the nurse was ordered to take the child at once to the hospital and prepare for operation.

After disinfection and anæsthesia, taxis was again attempted without effect. The hernia being congenital the usual operation was performed. The bowel was normal, but the omentum was darkly stained with extravasated blood. Heavy catgut was used for ligation of upper end of sac and the closure of pillars of the ring. No drainage—dressings were changed every time child urinated; subsequent history uneventful; canal firmly closed, cicatrix dense.

It is interesting to note that this child presented elongated prepuce with adhesions, a condition so often associated with prolapse of the bowel and hernia. In fact so frequently are these conditions associated, that one cannot but admit a causative relation between the irritation and muscular reflexes of the former and the displacement of organs of the latter. We do not always find what we look for, but rarely will a case of hernia or prolapse of the bowel be found among our little male patients without the indications for circumcision being also found.



**Villard: Appendicitis in a Child Four Years Old; Lateral Incision; Extirpation of the Appendix.** (*Journal de Clin. et de Thérap. Infantiles.* 1897. Vol. v., No. 16.)

The little boy had been habitually constipated. His illness began with pains in the right side of the abdomen, a distinct mass being felt in the iliac fossa. On the fifth day the operation was performed, and a large quantity of pus, containing some fecal matter, was evacuated. The vermiform appendix was gangrenous, perforated, and contained a fecal concretion.

The author believes that operative interference is indicated on the third or fourth day in cases of appendicitis, unless the symptoms show marked improvement.

**Clopott: Retropharyngeal Abscess in Children from Two Months to Two Years of Age.** (*Jahrbuch f. Kinderheilkunde.* 1897. B. xlv., H. iii., iv.)

The author reports six cases of retropharyngeal abscess in children from two months to two years of age. In some the cause could be traced to a suppurative otitis. In others influenza was looked upon as a cause.

The principal symptoms which call attention to the disease are interference with respiration and deglutition. There is loss of appetite, fever and the voice has a nasal twang. The head is apt to be held rigidly erect or to one side. There is often swelling at the angle of the jaw.

The respiratory disturbance may vary from slight disturbance to marked dyspnoea. The author advises that the incision should be made internally.

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#### MEDICINE.

**Dunlop, G. H. Melville: Tetany in Children.** (*Edinburgh Medical Journal.* 1897. No. 502.)

The recent researches into the origin and causes of tetany have created considerable confusion regarding the nature and symptoms of this disease. The view adopted by Kassowitch, and other German and Austrian writers, that tetany is simply one of the manifestations of rickets, does not afford a satisfactory explanation of the many cases of tetany in which no trace of rickets can be discovered. On the other hand, Escherich, who believes that the detection of laryngismus stridulus in a child is sufficient to justify the diagnosis of tetany, has considerably

strengthened the view upheld by many writers of the French school, who describe such cases as latent tetany, a condition which they affirm has no connection with tetany, in the true acceptation of the term. In a recent paper by Oddo (*Rev. de Méd.*), he advances the view that the chief cause of the nervous manifestations is an absorption of toxic material from the gastrointestinal contents. In refuting this theory, Kassowitch points out that dyspepsia is one of the commonest of children's ailments, while tetany is exceedingly rare. R. Fischl, at the Frankfort Congress of Naturalists (*Therap. Wochenschr.*) draws attention to the fact that, while during the summer months gastro-intestinal troubles are particularly prevalent, cases of tetany are of much less frequent occurrence than at other seasons of the year. To those objections Oddo replies, that for the production of tetany some particular microbe, or some specially perverted condition of the gastric secretion, should be present, possibly an excessive quantity of hydrochloric acid in the gastric juice, together with a specially unstable condition of the nervous centres.

He draws attention to the frequently found degeneration of the gray substance of the cord, beginning with hyperæmia and cloudy swelling, and going on to degeneration of the cells, which condition is chiefly marked in the anterior horns, as described by Bonome, Cervesato, Blondeau and Grisolle.

Although these degenerative changes have not been observed in all the cases which have been examined, they are such as might be produced from a poison circulating in the blood. He does not accept the German view that laryngeal spasm is pathognomonic tetany, though far from denying that it frequently occurs in children under two years of age, who develop symptoms of tetany; and he points out that it introduces an element of danger from sudden death into those cases which ought to be kept in view.

The author bases his therapeutic suggestions for the treatment of the disease on his conception that it is due to toxic poisoning. He advises the removal of the poisonous material by freely washing out the stomach and intestines; and at the same time administers small doses of calomel, benzonaphthol, or hydrochloric acid, with the object of checking the decomposition and fermentation of the intestinal contents. He rectifies any errors in the diet, protects the child from cold and excitement, and if there be reason to suspect the presence of worms, he

administers vermifuges. For affording immediate relief during the spasms, he recommends warm baths, chloral enemata, bromide of strontium, and the administration of chloroform, as the most effective measures.

Dr. Romme (*Gaz. Hebdomadaire de Méd.*) reviews the whole subject of the causation of tetany at great length. He reserves the diagnosis of tetany for those cases, and those alone, where a spontaneous characteristic contracture occurs, and deplors the habit which has arisen of describing laryngismus stridulus—Chvostek's symptom and Trousseau's phenomenon—as being symptomatic of tetany. He describes cases in which such symptoms are grouped as latent tetany; and he states, being supported in his opinion by Kalischer (*Rev. Mens. d. Mal de l'Enf.*), that these cases are never transformed into true tetany. He maintains that it is only by holding strictly to this point of view that the clinical individuality of tetany as a disease can be maintained.

Hauser, in the *Berl. Klin. Wochenschr.*, while joining issue with the views advanced by Romme regarding latent tetany, differs from him in believing that Chvostek's facial symptom, when well marked, only occurs in cases of tetany, and is never absent in such cases.

Romme considers tetany a disease resembling in many respects epilepsy, and having its origin in various predisposing causes, arising frequently in rickety children, without being a manifestation of that disease, frequently in children suffering from gastro-intestinal trouble, and occasionally at the commencement of the infectious fevers and acute illness. He believes that the toxins or ptomaines, resulting from those various conditions, have a functional rather than an organic effect on the central and peripheral nervous system, producing the characteristic spasm. He discusses the possibility of the disease being due to a special organism, support being given to this view by an epidemic of cases of tetany reported by Escherich.

**Lapersonne: Meningitis Due to Pneumococci After Enucleation and Orbital Operations.** (*L'Echo Médical du Nord*. 1887. Vol. i., No. 17.)

The case is that of a twelve year old boy, who received a wound of the cornea by means of a pair of scissors. On the fifth day enucleation of the eyeball was found necessary, and was performed the following morning, severe headache existing.



The eye, when opened, showed a purulent irido cyclitis with beginning trouble of the vitreous body. Three days after operation the temperature rose, and symptoms of meningitis became marked, causing death on the tenth day. The wound remained in good condition.

At the autopsy a suppurative meningitis was found over the convexity, but most marked at the base. The pneumococcus of Fränkel was found in pure culture in this pus and also in the optic nerve.

In this case the infection traveled along the lymphatics of the optic nerve, and a number of experiments on rabbits confirmed this fact to the author's satisfaction.

It has been proved that the pneumococcus may be present in the conjunctival cul-de-sac under normal conditions; or it may be conveyed there from the saliva, and so enter an orbital wound.

As for antiseptic solutions, alkalies would seem to be most efficacious in dealing with the pneumococcus, and experience has shown the hypochlorite of lime to be the best, in that it is well borne by the conjunctivæ, and is therefore suitable for prolonged irrigation.

**Cozzolino : Etiology of Cholera Infantum.** (*Rev. in Rev. Internat. de Médecine et de Chirurgie.* 1897. Vol. viii., No. 3.)

The experiments were made with the stomach contents and the blood in eight cases, four times during life and four times after death. The babies were from two to fourteen months old, and all presented the clinical picture of cholera infantum. In the stomach contents no special organism was found, the sarcina rosa, oidium lactis, staphylococcus pyogenes aureus, and bacterium coli commune being present, with a long, pathogenic, unidentified bacillus in one case only. In the blood the staphylococcus pyogenes albus was found in one case during life, other cases being negative. After death the blood contained no bacteria in two cases, while the bacterium coli commune found in two others was considered a *post-mortem* invasion.

The author concludes, therefore, that the stomach contents do not furnish any accurate information as to the etiology of cholera infantum, and that the infection is not carried by the blood.

**Prume, Jehin: Congenital Absence of the Iris.** (*L'Union Médicale du Canada*, N. S. 1897. Vol. ii., No. 5.)

The patient was a little girl eleven years old, with a good family history. The iris was completely absent from both eyes, causing the child to regard objects in so curious a manner that she was thought to be idiotic. Her mental faculties, however, were found to be good. By the ophthalmoscope the fundus of the eye was seen to be normal, and the choroid in direct contact with the cornea, without any trace of the ciliary body.

**Preysz: Pathological Anatomy of Diphtheritic Paralysis.** (*Archives f. Kinderheilkunde*, B. xxi., H. i., iii.)

The author reports having examined the nervous systems of three children who had died with diphtheria. In two cases he had found an involvement of the spinal cords and several of the peripheral nerves. In the third case the spinal cord, the vagus, and the phrenic were diseased. In the spinal cord there was atrophy, with localized distinction of nerve cells and hemorrhage. There was degeneration of the columns of Goll on both sides. There were localized areas of degeneration and exudation of both anterior and posterior nerve roots. In most of the peripheral nerves, particularly in the vagus, the recurrent laryngeal, and phrenic there was decided degeneration, with a marked degree of dilatation of the perineal spaces. The changes found were all of a degenerative, not of an inflammatory, nature.

The changes in the spinal nerve roots, and the columns of Goll are alike important, anatomically and clinically. The degeneration of the posterior nerve roots, which process begins in the intervertebral ganglion, shows that the diphtheritic paralysis may involve both the peripheral and central nervous systems. This also (referring to the above) explains the absence of knee reflex and the symptom ataxia. The unexpected deaths which occur in diphtheria convalescence are probably due to a high degree of vagus degeneration.

**Clark: Absence of the Thymus Gland in an Infant.** (*Ref. Jahrbuch f. Kinderheilkunde*, B. xlv., H. iii., iv.)

The patient was eight months of age and had always been well until he was six months old. The mother noticed at this time that both hands and feet were swollen, and that they appeared cooler than was normal. The swelling spread rapidly and

when examined by the author, was general. The skin presented a waxy appearance. There was no cyanosis. The lungs, heart and eyes were normal. The urine was acid, but there was no albumin. The swelling increased in spite of tonics and diuretics, so that the extremities felt like well filled cushions. In about one month two ecchymotic areas, the size of a half dollar, appeared on the inner side of both fossa supraclavicularis. The temperature remained normal. Death occurred after two months' illness.

The autopsy showed hydronephrosis on the left side with complete closure of the ureter. Further, there was entire absence of the thymus gland. The author attributes the entire illness to the absence of the thymus and thinks the hæmophilia helps to prove this.

**Siegel: Pathology of the Thymus Gland.** (*Jahrbuch f. Kinderheilkunde*, B. xlv., H. iii., iv.)

A child two and one-half years old developed what appeared to be asthma which developed into a permanent dyspnœa, associated with suffocative attacks. Tracheotomy was performed, but was of no relief to the patient. A canula was introduced, which extended to the bifurcation. This gave but little relief.

When the patient had been two months under observation, the mediastinal space was opened, into which the thymus protruded with each inspiration.

The partially detached thymus was then pulled forward as far as possible and attached to the fascia of the anterior mediastinum. The breathing became quiet at once, in spite of the removal of the canula. The child improved rapidly, and six weeks after the operation she was declared cured.

**Rocaz: Clinical Peculiarities of Typhoid Fever in Children Under Five Years.** (*Annals de la Policlinique de Bordeaux Treatment*. 1897.)

The author gives a description of the peculiarities of enteric fever, as met with in very young children.

The onset is frequently sudden, more so than in adults, the temperature rising to 104° F. or more in a few hours. Rillet and Barthez, however, look upon this sudden onset as indicative of gravity in the disease.

The intestinal symptoms are less marked than in adults, the younger the children the fewer and smaller the ulcerations.



Constipation, obstinate in character, is the rule in the early periods of the disease, but diarrhœa is a frequent complication, frequently persisting after defervescence; is obstinate and requires energetic treatment and strict diet. Emesis and anorexia are often prominent symptoms, sometimes assuming grave features.

The tongue as a rule remains moist, and varies as to foulness, or otherwise. The temperature is like that of the adult, though hyperpyrexia is commoner, and comparatively well borne by the patients.

The pulse is seldom dicrotic, but often rather slow and irregular, like that of meningitis. In the febrile stage these irregularities are indicative of cardiac exhaustion, call for careful attention, and often presage death; in convalescence they are not so grave. In the majority of cases the heart is regular in action. Bronchopneumonia is a grave complication.

With regard to rash, lenticular rose spots are the only pathognomonic symptoms in children and are usually regular as regards appearance, time of eruption, and prognostic value. Sudamina are common after the appearance of the rose spots. Desquamation is frequent after this disease in the very young. Abnormal eruptions are also of frequent occurrence in children, and more so than in adults.

The duration of the fever is shorter in children, though relapses occur more frequently, and are usually less serious than the first attack.

Convalescence is rapid, surprisingly so, and prognosis is mainly dependent on age, grave under three years, less so at four, and generally favorable at five and more.

**Morse, Frank L.: Death from Diphtheria and Its Causes.** (*Annals of Gynecology and Pediatrics.* 1897. Vol. x., No. 7.)

The author presents an extended paper based on the observation of 1972 cases of diphtheria treated in the Boston City Hospital since September, 1895. At that time the antitoxin treatment was adopted and the mortality of these cases was 13.3 per cent. These cases were treated in what is known as the South Department of the hospital. They were all true cases of diphtheria, clinically, with membrane, most of them being also confirmed by a bacteriological examination of the secretions of the throat.

On the other hand, before the use of antitoxin, an analysis of the cases treated at the Boston City Hospital proper, from 1891 to 1895, in ward E., shows a total of 1760 cases, with a mortality of 43.1 per cent. By a still further examination of the cases treated at the south department it is found that seventy deaths occurred in the first twenty-four hours after admission, and that thirty-eight more died in the second twenty-four hours. Deducting these cases, most of whom were apparently hopeless at the time of admission, the mortality is reduced to 10.3 per cent. and 8.4 per cent., respectively, surely an invaluable argument for the advocates of antitoxin.

The 266 deaths have been classified as follows: One hundred and seven died from sepsis, ninety-one from broncho-pneumonia, fifty-two from cardiac complications, thirteen from exhaustion, and one each from general tuberculosis, empyema and typhoid fever. A careful examination of the table of deaths shows that 109 of them occurred in the first forty-eight hours after admission, cases which were apparently hopeless from the time of entrance into the hospital. Of the forty-five cases of sepsis dying in the first forty-eight hours, thirteen died in the first twelve hours after admission. Some of the septic cases were also accompanied by broncho-pneumonia, but as the septic condition was apparently the predominating one, they are classified as such.

Of the fatal cases of broncho-pneumonia all were operative cases with eight exceptions, and one of these was a laryngeal case which did not come to operation; twenty-one of these cases died in twenty-four hours, and twenty more in the next twenty-four hours. Of the fifty-two deaths of cardiac origin, twenty occurred before the seventh day, which is considered the earliest day which cardiac paralysis due to nervous degeneration appears, and therefore they may be classified as cases due to the profound depression caused by the diphtheritic toxin. This depression manifests itself at times by an extremely slow pulse, in one case falling to twenty-eight beats per minute, and in another to thirty-two beats. The cases due to nerve degeneration appear on the seventh day or later, the latest case appearing on the sixty-fourth day.

**Leidy, Joseph, Jr.: Infantile Scurvy.** (*Boston Medical and Surgical Journal.* 1897. Vol. cxxxv., No. 17.)

The author reports two cases of this disease and gives the fol-

lowing recapitulation of symptoms: General debility, anæmia, sponginess and bloody extravasation of the gums; petechiæ and ecchymoses upon the lower extremities when present; the enlargement and tenderness about the joints and along the shafts of the bones; and the apparent loss of power, muscular rather than nervous in origin, in infants fed upon any of the proprietary foods or sterilized milk preparations, present a picture almost characteristic. The slight fever (frequently entirely absent), becomes an important point in the differential diagnosis from *acute rheumatism*, the swelling in scurvy being above and outside of the joint proper—in rheumatism confined to the synovial sack; and, finally, the *therapeutic test*, justly so-called, which is invariably attended by the rapid amelioration of the symptoms.

The history of the case, the absence of evidences of rickets, and the subsidence of the symptoms under treatment, all go to exclude the diagnosis of an affection, the symptoms of which are usually of pre-natal origin. In those cases where scurvy occurs in children previously the subject of rickets, the diagnosis might appear difficult; but even here the rapid disappearance of the acute symptoms under treatment would aid us in eliminating a distinctly constitutional disease.

**Hooche: Pathological Anatomy of Diphtheritic Paralysis.** (*Archives f. Kinderheilkunde*, B. xxi., H. i., iii.)

The *post-mortem* examination of one case is reported. The spinal cord, and a great number of the peripheral nerves and muscles were examined by various methods, with negative result. During life there was paralysis of the muscles of deglutition, of the vocal cords, and ataxia. The heart action was very irregular. The *post-mortem* examination of the heart showed fatty degeneration, but no interstitial myocarditis.

**Pasteur: Diphtheritic Paralysis Combined with Cardio-Pulmonary Symptoms.** (*British Medical Journal*; Ref. *Archives f. Kinderheilkunde*, B. xxi., H. iii., iv.)

The author reports thirty-two cases of diphtheria with this complication. Of these, twenty-six varied between two and six years. Nineteen were fatal, seventeen of which died with bulbar paralysis. In five the diaphragm was completely paralyzed. In these there was such an extreme collapse of the lung, that the organs sank in water. The author believes that death from



multiple-diphtheritic paralysis is greater than is generally accepted, the cause of death being asphyxia caused by bulbar paralysis. There was comparatively frequent paralysis of the diaphragm, sometimes with, sometimes without, bulbar symptoms.

**Lemoine: The Throat in Scarlet Fever.** (*Fahrbuch f. Kinderheilkunde*, B. xiii., H. iii., iv.)

The author has examined the secretions from the throats of one hundred scarlet fever patients. Not only was the mucous secretion and the pseudo-membrane examined, but cultures were taken directly from the tonsillar tissue.

The streptococcus was found ninety-three times in pure culture. In seven there was a mixed infection. The virulence of the infection depends upon the seat of activity of the micro-organisms. When they are deep seated the disease is usually severe.

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**Horse's Serum as a General Tonic.**—J. M. Lacruz, of Barcelona (*Arch. de Gin. Ostet. y Pediatría*) has tried the effect of serum drawn from a healthy horse on several children in his wards. Doses of 3 to 5 c.cm. were injected daily, and repeated every day for three or four weeks. The serum seemed to the author to act as a most powerful tonic. The red corpuscles increase in number, weight is gained, and the child visibly becomes stronger. There is no untoward secondary effect except slight rise of temperature and some acceleration of the pulse; there is no erythema and no albumen. A trifling epithelial deposit seen in the urine indicates slight irritation of the kidney, and the urine becomes more acid; these phenomena, however, are merely transient. The good effects of the injections are quickly manifested; cases of athrepsia in particular are speedily benefited, and the cure is maintained. Sixteen cases of chorea treated in the manner described were cured in a period of fifteen days on the average.—*British Medical Journal*.

# American Pediatric Society.

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TENTH ANNUAL MEETING.

Cincinnati, May, 1898.

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The Committee for the Collective Investigation of Infantile Scurvy, appointed at the last meeting, requests reports of cases of this disease, whether previously published or not. Blanks have been prepared and will be sent to any one applying to members of the Committee. Full credit will be given, and no case will be used in such a way as to interfere with subsequent publication by the observer. The final report of the investigation will be sent to those furnishing cases.

Returns must be received by April 1, 1898.

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# ARCHIVES OF PEDIATRICS.

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## Original Communications.

### A CASE OF TIC CONVULSIF.\*

(Maladie des Tics.)

BY J. C. WILSON, M.D.,

Philadelphia.

Cases of tic of various forms, with and without echolalia and coprolalia, are more common than the text-books would indicate, but fully developed forms with marked systematized movements which simulate purposive acts, constantly repeated at short intervals during the waking hours, are comparatively rare.

The following case, which closely corresponds to several in the series published in 1885 by Gilles de la Tourette,† will not, I trust, be wholly without interest to the members of this Society, especially as I present with it photographs showing the evolution of the attack.

The notes were taken by my clinical assistant, Dr. Walter Roberts.

The patient, Z., a school-boy fifteen years old, was admitted to the Pennsylvania Hospital, ward 3, bed 22, on the 25th of September, 1896. Father, mother, one sister and one brother living and in good health. One sister died in infancy from an illness the nature of which cannot be learned. It was stated that there was no nervous disease or nervousness in the family. Subsequent knowledge of the child's mother showed her to be a highly neurotic person with an uncontrollable temper. The patient was the youngest of four children, and is said to have had some cerebral trouble when one year old, from which he made a complete recovery. Had mumps at the age of five, measles at nine, an attack of malarial fever at ten. General

\* Read before the American Pediatric Society, Washington, May 4, 1897.

† Archives de Neurologie, 1885, Nos. 26-27.



health is said to have been always good until the beginning of the present trouble, though he is described as having been an exceedingly nervous child.

The present attack began three years ago with "nervousness." The patient became fidgety and restless, lost interest in his school work. Shortly afterwards he developed spasmodic twitchings of the muscles of his face, and had difficulty in swallowing, which was increased by excitement. He became more and more irritable, lost color, complained of cold hands and feet. His appetite remained good, and the bowels moved regularly every day. The twitchings of his face became more frequent, the muscles of the neck, upper extremities and thorax were gradually affected, until the fully developed paroxysms now present were established. About a year after the beginning of the present trouble his mental faculties became impaired. He was restless, irritable, passionate, and difficult to manage. He collected numerous small articles, playthings, spools, spoons, and the like, which he took to bed with him. The paroxysms continued through the day, being separated by very brief periods of rest. They frequently prevented him from sleeping, but during sleep they ceased wholly. They recurred at short intervals and were much more intense when he knew himself to be under observation, and in the presence of strangers or visitors. For two years he has been unable to attend school or to take part in the amusements of his friends.

Physical examination showed him to be a thin, under-sized, poorly developed boy, the cheeks slightly flushed, pupils dilated but equal, and equally responsive to light and accommodation, the lips red, tongue moist, but covered with a light brownish fur. Pulse small, regular, 90; heart sounds normal, no murmur, apex beat in the fourth intercostal space in the nipple line; area of cardiac dulness normal; respiration during intervals of repose slightly quickened, 22 to 24; percussion hyper-resonant over both lungs; liver dulness extends from the upper margin of the sixth rib to the costal margin in the nipple line; the area of splenic dulness normal; the abdomen symmetrical, soft, normal; the genitalia infantile, prepuce redundant. The urine is of a pale lemon color, specific gravity, 1019, reaction alkaline; on standing precipitates a flocculent white sediment. No albumin, no casts, no sugar.

The paroxysms consist of a definite series of movements

accompanied by inarticulate sounds. These movements and sounds are always essentially the same, but differ in intensity and duration. They are much more frequent when the patient is undergoing examination, or his attention is otherwise called to them, or when he is aware that he is being watched. When he first entered the hospital he was entirely unable to control them



TIC CONVULSIF.

Fig. 1. Showing patient in repose.

Fig. 2. Twitching of muscles of face and shoulders.

by any effort of the will. Later, after he had become accustomed to his surroundings and we had gained his confidence, he seemed, at times, able to slightly lengthen the interval by great effort, but the succeeding attack was always more violent and prolonged than others. At the beginning of the attack his expression becomes anxious, his face pale and drawn, the muscles of expression twitch, his eyes are rapidly closed and

opened, he bends forward, grasping a convenient chair or table for support, or more frequently resting his hands upon his knees. His head is drawn forward, his body strongly curved, his thighs and knees flexed, his feet separated. His hands tightly grasp the object upon which he rests, or the lower part of his thighs just above his knees. His head and the upper part of his body are violently moved backward and forward. After a series of such oscillations, numbering from five to eight, each accompanied with an inarticulate sound—*h-m*, *h-m-m*, *h-m-m-m*, and during which respiration is very shallow and incomplete, he straightens up, regains his breath, and the paroxysm ends with a long, sighing inspiration.

The movements are not rapid; those of extension of the body and head occupy much less time than those of flexion, which are gradual, progressive and prolonged, giving one the impression of a violent and continued muscular effort amounting finally to spasm. Violent contraction of the muscles of the chest is obvious, and the defect of breathing suggests spasm of the diaphragm. The interference with respiration is such that slight lividity of the face occurs in the more intense paroxysms.

The duration of the paroxysm is from fifteen to twenty seconds; the interval between them in the series occurring during excitement is from one to two or three minutes. When the patient was at repose, and not aware that he was under observation, the duration between the attacks was frequently ten or twelve minutes or longer, at the end of which period a series of three or four attacks would occur.

The muscles of the calves of the legs are in violent contraction, but there is no jumping, no movement of the feet. Neither echolalia nor coprolalia occurred during his stay in the hospital.

At the end of the attack the patient stands erect and his face assumes its ordinary expression, which is cheerful and pleasant. The mental condition described by the parents at the time of his admission to the hospital did not continue. On the contrary, he was quiet and amiable, for the most part obedient and causing little trouble. He spent much time with a pencil and paper, making rude drawings of surrounding objects.

The treatment consisted of the administration of nervous sedatives, at first chloralamide, to which later was added hyos-



cine; rest in bed from time to time for two or three days in succession, and an abundant diet consisting largely of milk. Subsequently he was given chloral.

Ten days after admission he was transferred to the surgical ward for the operation of circumcision, which was performed by Dr. T. G. Morton. During the subsequent month the



TIC CONVULSIF.

Fig. 3. Fully developed paroxysm.

Fig. 4. Spasm of muscles of the back.

notes show a very decided improvement in general health, while the paroxysms gradually became less intense and less frequent.

Shortly after his return from the surgical ward it was discovered that he was addicted to masturbation, and he confessed to having practiced this vice for a considerable time. Every effort was made to correct this evil, and among other measures

that were instituted was the use of splints at night. On the 10th of November, his mother having learned of the splinting of his arms and hands at night, became very angry and removed him at once from the hospital.

This case belongs to the group of nervous disorders which include the "jumpers" described by Beard, the latah of the Malays, the myriachit of Siberia, and which were demonstrated by de la Tourette in 1884 to be one and the same affection. The last author has shown that the disease is a progressive one, and has divided it into three stages.

1. The individual suffers from motor disturbances only. The movements are sudden, twitching, spasmodic, paroxysmal.

2. Stage of inarticulate cries. These cries coincide with the muscular movements, and are repeated.

3. The stage of echolalia and coprolalia. To the muscular paroxysms accompanied by inarticulate cries are now added articulate words or phrases repeated in definite order, or the explosive utterance of foul and obscene words or epithets.

To these stages may be added a fourth, which is characterized in addition to the foregoing phenomena by an irresistible impulse to imitate the words or acts of bystanders.

The patient Z. while under observation was in the second of these periods, the stage of violent muscular contractions with inarticulate sounds. At no time during his stay in the hospital were the attacks accompanied by the repetition of words or indecent language.

Under the influence of changed surroundings, rest, an abundant dietary, and drowsy drugs, sometimes pushed to the extent of producing continuous light sleep during part of the day as well as at night, noteworthy improvement occurred, an improvement which appeared to be increased by the effect of the surgical operation for the removal of the redundant prepuce. It would have been interesting to have retained the patient longer under observation.

Treatment in the reported cases has not been followed by permanent improvement. Such measures as isolation, hydrotherapy, static electricity, the administration of the preparations

of iron, and nervous sedatives, have rendered the attacks less severe and prolonged the intervals between them, but have not been followed by permanent cessation of the trouble. In this connection we recall the saying of Beard—"Once a jumper always a jumper."

My thanks are due to Dr. Spellissy and Mr. Wilbert for the photographs.

1437 WALNUT STREET.

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**The Treatment of Chlorosis.**—The following efficient formula in the treatment of anæmia and chlorosis is designed for children over fifteen years of age. Take half the dose for children of five to fifteen years, and a quarter dose for children under five years. There is said to be no harm in overdosing for about twenty per cent. of ferratin is absorbed and the balance is promptly excreted, without deranging the stomach and without causing constipation.

R $\bar{y}$	Ferratini,	.	.	.	.	.	.	15.0
	Natr. bicarbon.,	.	.	.	.	.	.	9.0
	Sacch. alb.,	.	.	.	.	.	.	15.0

M. f. pulv., No. xxx.—Take a powder three times a day in a glass of sweetened water.

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**The Treatment of Cardiac Disease in Children.**—In the more severe forms of cardiac inflammation, which is the most characteristic feature of rheumatic fever in childhood, opium, digitalis, and strophanthus, with an alkali, are the drugs of most service. The former is best given as nepenthe, in frequent small doses, and it does more than any other drug to relieve distress, lessen dyspnœa, and subdue pain. Alcohol is also a useful agent, as much for its sedative as for its stimulating properties. As a last resort in older children, when the heart shows signs of failure, and the pulse becomes small and irregular, hypodermic doses of liq. strychniæ, an eighth of a drop to one drop, combined with one to three drops of digitalis, given in the same way, afford the most powerful means of resting the flagging heart.—*Treatment, Edinburgh Medical Journal.*



# A CASE OF GOÏTRE CURED BY USE OF THYROID EXTRACT.\*

BY FRANCIS HUBER, M.D.,  
New York.

The following interesting case, here briefly recorded, was presented a number of times by the attending physician, Dr. F.



NO. 1—SADIE K., SHOWING GOÏTRE BEFORE TREATMENT WITH THYROID EXTRACT.

Bierhoff, before Prof. Jacobi's class in the Children's Department of the Vanderbilt Clinic. The improvements in the local condi-

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\*Read before the American Pediatric Society, Washington, May 5, 1897.

tion and the mental state were marked and occurred within the short period of a few weeks. The case was carefully observed and studied by a number of gentlemen.

Sadie K., seven years of age, oldest child, was born in the



NO. 2—SADIE K., SHOWING THE RESULT OF TREATMENT WITH THYROID EXTRACT.

United States. The goitrous growth had been noticed about eighteen months. Within the last six or seven months it had grown perceptibly. The lateral measurement was three and a half inches, the vertical about two inches. The two lateral

lobes and the isthmus were involved in the morbid process. As evident from the photograph the right was more prominent, and upon palpation its crystal nature was evident and outline fairly marked. The degeneration of the isthmus was well marked, the left lobe though quite large, outline less distinct.

The mother had observed that the child was not as bright nor was the memory as good as before the appearance of the tumor.

There was no history of tuberculosis in the family. It is stated that the maternal grandfather has a goître, believed to have been present since birth, but now somewhat smaller.

The child was put on treatment February 13th, Thyroidine of Parke, Davis & Co., being employed. One grain daily was given for three days; two grains daily were given for three days, and then three grains were given. When the little one had taken the extract for a week some restlessness during night was observed.

After four weeks' use the extract was stopped, and the three bromides were substituted for one week.

The improvement in the goïtrous tumor was rapid and in about six weeks the growth had entirely disappeared, nothing being appreciable upon careful palpation. The photograph, taken two months later, shows no undue prominence about the neck.

As the subject of thyroid therapy is to be discussed by Dr. Koplik, I shall content myself with simply placing the case on record.

To the history given above, I should add that the little patient still receives the remedy in small doses, as it was not thought advisable, in view of the fact that the disease had existed for years, to discontinue the remedy too early.



# A CASE OF EXOPHTHALMIC GOÏTRE APPARENTLY CURED BY THE USE OF THYROID EXTRACT.\*

BY CHARLES GILMORE KERLEY, M.D.,

Assisting Attendant Physician, Babies' Hospital; Lecturer on Diseases of Children, New York Polyclinic.

The patient, a poorly developed girl thirteen years of age, came under my care in September, 1895. The family history was as follows:

The father, sixty-five years old, carpenter by occupation, well at the present time, but was said to have had epilepsy when a young man. The mother, fifty years of age, was in good health. A sister died with tubercular meningitis in her nineteenth year. A brother and sister are living and well. Two first cousins, the children of the father's brother, are feeble-minded. The patient had never been as vigorous as the other children in the family. She developed slowly, both mentally and physically; walked at the eighteenth month, and did not talk until she was nearly three years old. She was frail and excitable as an infant and growing child. There was no illness of consequence until she was six years old, when she had a severe attack of measles, but made a good recovery. During the six years that followed she enjoyed fair health. She attended school, but made slow progress; could read, spell and write short sentences. She was useful about the house, could run errands and perform simple duties satisfactorily.

The present illness developed when she was twelve years old, twelve months previous to her coming under my care. The history of this illness was given by her mother, substantially as follows:

While playing in the garden she received a blow on the right side of the neck, from behind. This caused intense fright, which was followed by hysteria and considerable prostration. A large and painful swelling developed at the site of the injury. All its local manifestations subsided under treatment, but with the abatement of these symptoms a pain of a different nature developed in the cervical region on the right side. It could not be located more definitely by the patient. She simply complained of pain on the right side of the neck. There was never

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\*Read before the American Pediatric Society, Washington, May 5, 1897.

pain upon pressure. The pain was peculiar, not only in that it could not be positively located, but that it was present only upon assuming an erect position. To hold the head erect was impossible. When sitting she rested the head and shoulder against the back of a chair. She could walk only by resting her head and shoulder against her mother. The symptom of pain and with it languor, loss of appetite, palpitation and protrusion of the eyes, gradually appeared, and two months after the injury was as pronounced as when I first saw her, ten months later. At first she was treated by the family physician, then other physicians, one of whom suspected spinal disease and sent her to an orthopædist. He failed to detect anything wrong in the spine and referred her to a neurologist. This gentleman treated her four months for exophthalmic goitre without benefit. She then came under my care.

The patient upon examination proved to be a frail, but fairly well nourished girl of average height, weighing seventy-five pounds. The head was small, the forehead low and retreating, the features pointed but well shaped. The eyes were very prominent, the right being more so than the left. The lids failed to close over the right eye in sleep. There was slight divergent strabismus, the eyes being otherwise normal. There was no loss of power in the extremities. The knee jerk was exaggerated. There was no paralysis, and the urine was normal.

The heart was rapid, ranging between 120 and 140 per minute. When in a recumbent position it was never less than 120. The heart action was tumultuous with throbbing carotids, but when we looked for a corresponding change in the pulse at the wrist it failed us. The pulse was small and soft. The contrast was striking. The thyroid gland was perceptibly enlarged.

To take a step without assistance was impossible, not on account of want of strength, but because of the intense pain in the neck which followed upon an attempt to hold the head erect. The pain in the neck was doubtless one of the unexplainable neuralgic manifestations which sometimes develop during this disease. In this case there was evidently an involvement of some of the branches of the cervical plexus.

*Treatment.*—Knowing that treatment with drugs, electricity and baths had been carried out and failed, the patient was at once put on the dessicated thyroid. All other treatment was

discontinued. Five grains were given after meals three times a day. The results were phenomenal as far as the pains were concerned. For two days there was considerable relief. Then there was a gradual, daily improvement until the ninth day, when the powders gave out. For two days no thyroid was given and the pain returned but was again relieved in a measure when the drug was resumed. On the fourteenth day of the treatment the pulse was 96. Appetite had improved and the patient expressed herself as feeling much better. Twenty-ninth day of the treatment the pulse was 100. There was still considerable pain in the neck, but she walked alone twenty-five feet, holding the head fairly erect. This was the first the patient had walked unassisted in ten months. The eyes were less prominent, the lids closing on both when asleep. Distress in the stomach and dizziness was complained of. This was attributed to the large dose of the thyroid. It was reduced to three grains three times a day.

*Fortieth day of treatment.*—Can walk alone with comfort; very little pain in the neck; is much stronger; takes a lively interest in her surroundings; still a slight feeling of discomfort in the stomach; thyroid reduced to two grains three times a day.

This amount was given regularly for the next four months. Slow, steady improvement was made. She increased in flesh and strength. The palpitation ceased. The eyes approximated the normal.

The pain in the neck subsided completely at the end of the second month.

Five months to the day from the time the thyroid treatment was begun, she arose, dressed herself alone and went downstairs for breakfast. She had not done this in seventeen months before. She continued to suffer from a slight degree of indigestion and the thyroid was discontinued.

Since discontinuing the treatment I have seen the patient every two or three months, the last time being two weeks ago. The eyes are still slightly prominent, with thyroid gland slightly enlarged. In other respects she is, according to the mother's statement, as well as before the injury.



## HEREDITY AND DEGENERATION.\*

BY FLOYD M. CRANDALL, M.D.,

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The results of hereditary tendency are seen more frequently in pediatric practice than in any other department of medicine. Heredity is a most potent factor in all pathogenesis, and is more active in children than in adults. It is so strong in some conditions that there is no escape from its power. Many of the sins of the father are visited relentlessly upon the children. In other cases the tendency is very slight and simply furnishes a soil upon which the germs of disease act as the seed.

It is not my intention to enter upon an extended consideration of the broad subject of heredity, but rather to speak of a few important points which are often ignored or forgotten by the practitioner. No subject is more complex nor apparently more contradictory. This is due to the fact that the factors which make up physical and mental character are, themselves, complex and contradictory. There are certain elements in hereditary tendency to which I wish especially to call attention, but before doing so will refer briefly to the subject of degeneracy with which heredity is often confounded. Degeneracy and heredity are two totally different phenomena, but are frequently referred to as if they were synonymous. Degeneracy is at present a popular fad both within and without the profession, and has been made to cover a multitude of conditions to which it cannot, with any scientific propriety, be applied. The jaundiced mind of Nordau sees only a jaundiced and degenerate world, and has attempted to throw the stigma of degeneracy over many conditions due to totally different causes.

A brief review of the meaning of the two terms may, therefore, be profitable. Heredity is defined by Foster as "the inheritance of certain qualities or tendencies." It has still farther been defined as "the tendency manifested by an organism to develop in the likeness of its progenitors." Degeneracy, on the other hand, is defined by Foster as "the absence or loss of that degree of development or energy seen in the ancestry of the organism." Maudsley defines degeneration as follows: "It is now used ex-

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clusively to denote a change from a higher to a lower kind; it is a process of dissolution, the opposite of that process of involution which is pre-essential to evolution."

It is clear, therefore, that heredity and degeneracy are two quite different conditions. The one is a tendency to develop the type of the ancestor, the other is a tendency to develop a lower type than that presented by the ancestor. The one produces a condition similar to that of the progenitor, the other a condition dissimilar. Heredity is always due to inheritance; degeneracy may be due to inheritance or acquisition. Inheritance is an absolute requisite in heredity, it is a mere incident in degeneracy. Degeneracy is due to many causes; it may be congenital or acquired. These causes are admirably set forth by Hirsch under three general headings: Degenerative hereditary transmission; pre-natal disturbance of development; post-natal disturbances of development.

1. *Degenerative heredity transmission.* In simple heredity a predisposition only is transmitted; degenerative hereditary transmission implies a diseased general substance, which may lead to progressive degeneration of posterity. Disease to the germinal substance may be due to actual poisoning, particularly by alcohol. It seems to have been proven that chronic drunkenness is not essential, but that temporary drunkenness at the time of conception is sufficient to cause a degenerate state to be transmitted to the offspring. While such a condition of degeneracy may be congenital, it is in no sense hereditary. Heredity is the transmission of qualities or tendencies, which are an essential or integral part of the being or character of the parent, and not of temporary conditions which have occurred in the parent as mere accidents. Inebriety, however, shows an appalling tendency to leave its mark upon posterity and is one of the most frequent causes of true degeneracy. Not only is drunkenness in the child a frequent sequence of inebriety in the parent, but the child of such a parent is very subject to neurotic diseases of all types. Those mixed heredities, in which inebriety is added to profound neuroses are more liable to result in degeneracy than any other common form of inheritance.

2. *Pre-natal disturbance of development.* This may be due to bad nutrition on the part of the mother as the result of rickets or other general disease. It may, also, be due to accidents or to the poison of infectious diseases from which the mother may

suffer. This is not heredity, but rather, pre-natal *infection*, causing diseases which develop during the first months of life. The word *congenital* not *hereditary* should be employed in naming such diseases.

3. *Post-natal disturbances of development.* These may result from injuries at the time of birth, injuries to the head during early childhood, or to the occurrence of infectious diseases in infancy. It is clear, therefore, that degeneracy may result from many causes, of which hereditary transmission is but one.

Gradual progressive degeneration is a condition of great interest, which is sometimes wrongly attributed to heredity. It has been most carefully studied by Morel of Rouen, who gives the following as an example:

First generation: Nervous temperament; moral depravity; excesses.

Second generation: Tendency to apoplexy and severe neuroses; alcoholism.

Third generation: Intellectual incapacity; mental derangement; suicide.

Fourth generation: Imbecility; deformities; arrested development. With this generation the race comes to an end by sterility.

By heredity, therefore, the offspring inherits a tendency to the disease of the progenitor. If the parent has tuberculosis, the child inherits a tendency to tuberculosis. If the parent has gout, the child inherits a tendency to gout. In progressive degeneration, examples of which are most frequently seen among the drunken and vicious, the child inherits something different from the disease of the ancestor, becoming in each generation more radically wrong until actual idiocy is reached. It is different from Maudsley's "heredity with transformation of neuroses."

Excluding degeneration from further consideration, there are three factors in heredity to which I wish to call particular attention.

1. *There are elements of good heredity which frequently neutralize those of bad heredity.*

There seems to be a tendency on the part of both medical men and laymen to forget that there is such a thing as good heredity. It is an erroneous, but a very common belief that certain diseases are always repeated unmitigated from generation to generation. It is true that this sometimes happens, but it is



by no means a universal rule. The mere expression, hereditary tendency, seems to suggest to most minds tuberculosis, scrofula, rheumatism, gout, or specific diseases. These diseases in the ancestor very frequently produce more or less decided manifestations in the descendant, but we are not infrequently surprised that such manifestations are so slight. We now recognize the fact that few diseases are directly inherited, but rather some tissue peculiarity which renders the individual peculiarly susceptible to those diseases. Such tissue peculiarity is more or less pathogenic and produces a *tendency* to a disease, rather than the disease itself. If the individual inherits from the other parent a sound tissue condition, one inimical to the development of a given disease, we may never see in the child any tendency manifested toward that disease. This principle undoubtedly explains why some children escape, so remarkably, a tendency to a disease whose appearance we have much reason to expect. It is quite true that it is far easier to be certain of the actual presence of a disease in a person, than to know that he really has no tendency to it. Nevertheless, the complete absence of a disease in a family or an individual is an element of decided importance. Absence of a disease in one branch of a family is of particular importance if it is evident that the child decidedly resembles that branch of the family, rather than the other in which the disease may have existed. The resemblance to one parent and to the family of that parent is sometimes very striking. Such resemblance is usually not confined alone to features and physical appearance, but is also seen in temperament and behavior under disease influences. Total absence of a disease in the past is, certainly, an element to be taken largely into consideration in endeavoring to determine its probable occurrence in the future.

2. *A tendency, even if slight, if it exists in both parents, may appear in the child in an exaggerated degree.*

This principle accounts for strong tendencies which sometimes appear in children, when the family history shows but slight tendency in that direction on either side. A father and mother, for example, who are moderately rheumatic, may have a child who is extremely rheumatic, having inherited, so to speak, the combined rheumatism of the parents. He therefore shows rheumatism in a pronounced degree. Had one of those parents been a member of a decidedly non-rheumatic family, the child might have escaped, perhaps, with a less rheumatic ten

dency than that exhibited by the other parent. When a tendency to a given disease or a given temperament is strongly marked in both parents, the child very rarely escapes. The inherited tendency in such conditions is frequently so great as to cause serious physical or mental aberration. One of the causes of degeneracy is this combined inheritance of grave pathologic physical or mental conditions.

3. *Heredity is strongly modified by a powerful tendency on the part of nature to preserve the type of each family and species.*

It is now the almost universal belief of scientists that species have gradually changed and that probably one has been evolved from another by the slow processes of time. A species therefore is not an absolutely fixed type, but is rather something destined to change slowly from a lower to a higher form. It has been defined as a central form with a certain possible range of divergencies. But this range is limited by the type to which the species belongs and beyond this limit it never goes, except in an occasional anomaly. Permanence of type is one of the most unchangeable laws of nature. Abnormalities and exceptions may occur, but the tendency is not to their repetition, but rather to reversion to the original type. Abnormal cases, while they evince oftentimes a strong tendency to reproduce themselves, are continuously under the influence of this law. The child of a talented man is frequently as talented as his parent, but the child of a great genius is rarely a genius. The great genius is an anomaly and his child tends to revert to the average type.

As a farther example, take the question of bodily height, upon which accurate observation is easy. It has been demonstrated, by scientific observation, that the children of tall parents are generally shorter than the parents, and that the children of short parents are generally taller. Prof. Wilson affirms that there is a strong tendency to keep to the average height of five feet eight and one-half inches.

These are but two examples of a law which has a very wide application. Nature, while she permits infinite diversity and encourages individuality, even to the extent of tolerating many exceptions and anomalies, is strongly adverse to their repetition, and permits no long continued wandering from the limits of the type. This the practitioner sees continually in disease. While no two cases of a given disease pursue exactly the same course,

the average of any hundred or thousand cases is surprisingly like the average of any other similar group of cases. Typical cases are, therefore, to a certain extent, hypothetical, for one rarely sees a case which is exactly like the typical case in all its details. Nevertheless, it is the ordinary or average case which we continually see in practice, and it is the ordinary and average individual whom we commonly meet in daily life.

A study of species shows that the whole tendency of evolution has been upward. "No type of organization," says Winchell, "having once entered the portal of a higher life, has been permitted to retreat." The *genus Homo* is no exception to this rule. It has steadily advanced through the ages, each race ever keeping within the limits of its own type. "No new race," says Topinard, "having characters other than those of the mixed races, has been created within our knowledge." Evolution has ever been from a lower to a higher type. There is, to my mind, no evidence to show that this great law of nature has been reversed in our own generation. It is true that we see many examples of individual degeneracy, but it has not been demonstrated that they are more common now than they have been in the past. One could also cite examples of cultural degeneracy, due to causes which have robbed the intellectual powers of their activity. Such degeneracy has occasionally involved communities, in a few instances of considerable size, but it has never involved a race or a continent. Even when such degeneracy has occurred, there has been no corresponding structural degeneracy. Structural degeneracy is sporadic, involving individuals or families. In the latter case its repetition is frequently brought to an end by sterility and extinction of the family.

What is true in the broader field of races, is also largely true in the more limited one of nationality, tribe and family. Nature is still very tenacious of the type, and preserves it unchanged through passing generations. The experience of the practicing physician confirms this. While he sees numerous examples of inherited taint and congenital defects, he also sees defects in the parents obliterated in the children. He sees neuroses in one generation appearing in milder form in the next, or disappearing altogether. He sees many children stronger and more robust than either parent.

It is a mistaken conception that hereditary tendency is only toward the bad and away from the good. There are two well



defined tendencies in heredity—one toward the normal, the other toward the abnormal. These tendencies are constantly at strife; had the stronger tendency not been to revert to the normal type, the course of the race would not have been to continuous advancement, but to steady and continuous degeneration and final extinction.

It has been my endeavor to call attention thus briefly to a few facts which a wide reading of current pediatric literature has led me to believe are often misunderstood. These facts are as follows:

1. Heredity and degeneration are two totally different phenomena. One is an inheritance of tendencies or qualities possessed by the ancestor; the other is a loss of those qualities. The one produced a condition similar to that of the progenitor; the other, a condition dissimilar. The one is always transmitted; the other may be transmitted or acquired.

2. There is a condition of gradual, progressive degeneration requiring several generations for its complete course, which is entirely different from heredity.

3. There are elements of good heredity which are as potent as those of bad heredity. Health, vigor, and a sound constitution are transmitted with as much certainty as are rheumatism, gout, and tuberculosis.

4. A tendency to certain diseases shown by one parent may be partially or wholly neutralized by a sound constitution in the other parent.

5. A tendency to a given disease possessed by both parents may sometimes be seen in intensified form in the offspring.

6. A powerful tendency on the part of nature to preserve the species and to revert to the common type, is a constant and potent factor in preventing the repetition of extremes, either good or bad, and maintaining the type undegenerated.

113 WEST NINETY-FIFTH STREET.

# WHAT IS MODIFIED MILK AS DISTINGUISHED FROM OTHER PREPARATIONS OF FOOD?

BY T. M. ROTCH, M.D.,

Professor of Diseases of Children, Harvard University.

The first step in the scientific feeding of infants and one which finally resulted in what is understood by the Modified Milk of the present day, was taken by Dr. Frankland in 1854. His whey mixtures were in reality cream mixtures, and by his modifications he clearly showed that he was aware of, and was endeavoring to obviate the deficiency in fat which had existed in all previous dilutions of milk and water. At a still later date, various clinical teachers, notably Biedert and Monti, modified milk with especial reference to the addition of cream, and from this the name of cream mixture arose. Still later Dr. Arthur V. Meigs, finding that his father Dr. J. F. Meigs was most successful with a mixture of cream, milk, lime water, sugar, and water, analyzed the mixture, and then by a series of experiments adopted a formula which he held corresponded to the percentages of Fat 4, Sugar 7, Proteids 1, representing human milk and laying especial stress on the unvarying 1 per cent. of the proteids. The essential features of the younger Meigs' work were that he held the opinion that normal human milk was unvarying and that his modification was unvarying. This Meigs mixture contained 25 per cent. of lime water, which, contrary to the case of human milk, is strongly alkaline. As later investigators studied more and more the question of milk modification and the analysis of human milk, they became convinced of the value of milk modification as a principle, but they also recognized that the former methods of modification were unreliable and entirely inadequate. The unreliability arose from the fact of the great variations in the percentages of the fat, sugar, and proteids in the creams and milks used for modification, so that with exactly the same proportions the mixtures gave widely different constituent percentages in their results. The inadequacy of the Meigs formula was clearly apparent as soon as the more extended analyses of human milk showed that there were no unvarying percentages of fat, sugar, and proteids in it, but on the contrary that there was quite a wide range of variations within the limits of normal human milk. The modified milk of the present day therefore represents something

far different and of vastly greater range and importance than it did in the time when only whey mixtures, cream mixtures, and the Meigs mixture were known by the profession. Like all advances in science, each of these previous modifications has served as a stepping-stone for acquiring the perfection of infant feeding, which we hope to reach in the future. We have arrived at a point in infant feeding where we recognize the vital principles of the question, namely, that human milk, when properly adapted to the individual infant, represents the standard which we should follow in substitute feeding: also that this standard varies, so that we may have many combinations of the elemental percentages of fat, sugar, and proteids and yet have all these combinations represent normal human milk.

In modifying milk, therefore, to correspond to this varying standard of human milk we must have purity of supply and sterility of the modifying materials, no foreign matters, means of obtaining many different combinations of fat, sugar, and proteids to suit the individual infant, and accuracy in obtaining these varying percentages by modification. Two requirements also are of vital consequence; first, a knowledge of what combination in the especial case is indicated. This can only be attained by the educated physician. Second, a guarantee that the percentages demanded by the physician shall be accurately dispensed to the consumer. This can only be done by skilled supervision and trained clerks in a milk laboratory.

This means that we are entering upon an era in infant feeding where, following in the footsteps of those who have emancipated orthopædics from the instrument maker, and obstetrics from the midwife, and in this way we shall give to young human beings what it is their right to demand, namely, our own knowledge and experience in place of that of the non-medical proprietors of the infant foods. Also, instead of leaving to the nurse and to the mother, necessarily ignorant of the many factors involved, the solution of such a difficult medical problem, we shall make sure, by means of our accurate instrument, the laboratory, that the infant is getting what we prescribe.

The modified milk of the present day is fresh milk, made to accurately represent in its percentages of fat, sugar, and proteids and in its combinations of these percentages, the figures written on the physician's prescription. This provides the physician with the power to think and to write in percentages. It is certain



that we can no longer cloak our ignorance, when an infant does not thrive on the food we give it, by saying that the food is poor, for the food may be a suitable food for another individual, and the probability will be that we have failed to make the proper combination for the especial case.

The modified milk of the present day demands a knowledge on the part of the physician and of the milk modifier, of the chemistry, physiology, and biology of both human milk and cow's milk, and of the principles of modification. These principles are simple and self-evident and yet have never before been carried out until insisted upon by the milk laboratory. They are as follows:

1. The materials for modification must be fresh, safe, stable, and practically aseptic.
2. There must be accuracy in the modification in the laboratories, so that the exact mixture may result from the prescription.
3. There must be the utmost care in preserving the milk after it is delivered to the consumer.

In the first instance (1) it must be remembered that the cow is a sensitive animal, easily yielding to conditions good or bad in which she is placed. She is liable to diseases communicable to man and especially to infants. She is a ready vehicle for the transmission of obscure and often untraceable maladies, and her attendants are often the means for conveying many diseases. It is therefore evident that milk for infant feeding should be produced with the greatest care. It cannot with safety be disinfected by antiseptics, and yet it is not only readily thrown out of equilibrium but it is also a good culture medium for rapid and dangerous toxic changes. These requirements are met and their dangers obviated by the model farms connected with the laboratories where the cows are selected with especial reference to their freedom from disease and their capability of producing a stable milk, also by the demand of the laboratory that those who care for the cows should be free themselves from disease and sufficiently intelligent to understand that cleanliness and asepsis must be carefully practiced. In this way the suitable materials for milk modification can best be obtained.

In the second instance (2) the laboratory insures accuracy by employing for the calculation of the percentages and the mixing of the modifying materials intelligent clerks trained for this purpose. The third instance (3) is the one which necessarily is least under the control of the laboratory, and yet is very impor-

tant and one where failure may entirely offset the value of the first two principles. It is the duty of both the physician and the milk modifier therefore to explain to those who are in charge of the milk when it reaches the consumer, the scientific rules which will preserve it from deleterious changes. Unless this is done, and these rules rigorously enforced, the whole value of the system of modified milk may be destroyed by a careless mother or nurse. The laboratory must indeed often bear the blame of ignorance and carelessness entirely outside of its own direct supervision, and it is perhaps inevitable that the laboratory should at times be made the scapegoat both of the physician who has not learned the principles or practice of percentage feeding, and also of the mother or nurse who use carelessly what has taken so much scientific effort to produce. All these facts should be carefully considered by those who are investigating this new system of feeding, and, while allowing the great difficulties inherent to all systems of feeding, whether by the many infant foods or by irregular home modification endeavoring to copy laboratory completeness, yet acknowledge that accuracy in modification and the overcoming of these difficulties can best be accomplished in a thoroughly equipped laboratory.

The functions of the medical adviser and of the milk modifier must not be confounded. The duty of feeding in every detail should rest with the physician: the duty of producing and supplying the food with the laboratory.

What then is the present position of modified milk, and what have we attained by it? Physicians have learned to think and speak in percentages, and their thoughts can be embodied in percentage prescriptions which can be put up accurately at the milk laboratories. Finally, that these laboratories are under the skilled supervision of those who intend to keep them on an honest scientific basis, irrespective of the commercial value which must necessarily attain to them.

# DETECTION OF FŒTAL HEART MURMUR IN GRAVIDA WITH REPORT OF A CASE.

BY J. N. HALL, M.D.,

Professor of Medicine in Gross Medical College; Visiting Physician to  
the Arapahoe County Hospital, Denver, Colo.

Osler mentions, in his Practice of Medicine, that fœtal endocarditis has been diagnosed *in gravida* by the detection of a rough systolic murmur through the abdominal walls. He has kindly given me the references to these cases—two quoted by Hochsinger, and the third reported to the American Pediatric Society by Christopher of Chicago. Longstreth refers to a case, but it is probably one of those quoted by Hochsinger. The reported cases are briefly as follows:

H. Barth\* saw a pregnant woman who presented, to the left and below the navel, instead of the normal fœtal heart-sounds, a widespread, rough, systolic murmur. The child was still-born, and presented, upon section, enormous hypertrophy of the heart, especially upon the right side, with thickening of the tricuspid valves, and abundant endocarditic vegetation.

Hennig† reports the second case, occurring in a woman with contracted pelvis, who was artificially delivered in the eighth month. Before delivery it was found that both heart-sounds were replaced by murmurs, and this was confirmed by examination of the already cyanotic fœtus after delivery. Section demonstrated the presence of extensive endocarditis about the aortic valves, giving rise to both stenosis and insufficiency.

The case reported by Christopher occurred in the practice of Frederick J. E. Ehrmann, of Chicago, who has kindly sent me the notes for this paper, an abstract of which I present:

A German woman, thirty-two years of age, presented herself in the eighth month of her third pregnancy, for examination, and everything was found practically normal. The fœtal heart-sounds were pure, 150 per minute. At time of labor the fœtus presented O. L. A., and a murmur was found in the left iliac fossa, 140 per minute. The female child was born after a normal labor, and was normal excepting for a systolic murmur, heard over the cardiac region, and transmitted to the neck.

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\* Quoted by Hochsinger.

† Ibid.



Cyanosis appeared on the second day, and the child expired on the fourth, there having been no material change in the murmur. The remainder of the report I give in Dr. Ehrmann's words:

"Diagnosis before birth, possible intra-cardiac lesion, on account of the previous clear tones, but later only murmur. The umbilical souffle was thought of."

"Diagnosis after birth, aortic valvulitis, which, on account of the rarity with which inflammation occurs on the aortic valves, was thought to be possibly connected with some anomaly."

"*Post-mortem*.—Patent foramen ovale, verrucose thickening of aortic valves, and also tricuspid. No pulmonary artery arising from right ventricle, but from aorta just above sinus of valsalva."

My own case was as follows:

Mrs. P., American, primipara, seventeen years of age. Position, O. R. A. The fœtal heart was heard with the ear, as I had then no stethoscope with me, 124 per minute, to the right of the navel, and nothing abnormal was noted. The placental bruit was marked just at the left of the navel.

The first stage progressed very slowly, pains being absent for many hours. The next day at noon they began again, and I examined the abdomen with the stethoscope.

The heart beat at the same rate, being heard about two inches downward and to the right of the navel. The first sound was rough and blurred, the second being normal. My assistant, Dr. S. S. Connacher, examined the case and noted, under my direction, the murmur replacing the first sound. I stated at this time that, in my opinion, we should find a systolic murmur over the child's heart after birth, probably originating from the right ventricle, because of the marked predominance of right-sided endocarditis in fœtal life.

A boy weighing seven pounds was delivered at 4 P.M. with forceps. For about fifteen minutes he was decidedly cyanotic, although the heart could be seen at first, beating forcibly, over an area greater than usual. A rough, slightly musical systolic murmur, loudest at the junction of the third costal cartilage and the sternum, was heard by both of us. It was not transmitted materially in any direction, and could not be heard in the back. The pulmonic second sound was accentuated. From the very unusual area of pulsation of the heart I had at first supposed the

organ to be hypertrophied, but I apparently erred in this in not taking into account the temporary difficulty in respiration, on account of which the lungs had not expanded so as to cover the heart to the normal degree. A half hour after birth, respiration was well established, cyanosis had disappeared, and the area of cardiac dulness was normal.

On the third day Dr. S. D. Hopkins examined the case with me. The murmur was about as at the time of birth, but seemed to me somewhat weaker. The pulmonic second sound was thought to be three times as pronounced as the aortic. Unfortunately I failed to note whether the sound was transmitted into the arteries of the neck, although I believe that I should have noted it had such transmission existed.

During the next week the murmur grew progressively weaker, and on the tenth day the heart was entirely normal in its action so far as I could determine.

At the time of my report of this case to the Denver and Arapahoe Medical Society on May 25, 1897, I had not had opportunity to study up the possible modes of origin of the murmur, and especially had not had access to Hochsinger's invaluable work (*Die Auscultation des kindlichen Herzens*). I believe, however, that I am now able to offer a satisfactory explanation of the origin of the murmur.

It will be recalled that the ductus arteriosus botalli conducts the fœtal blood from the pulmonary artery to the aorta, the artery being unable to conduct the blood to the lungs as after birth, because of the non-use of these organs during the fœtal life. When the lungs begin to receive the blood from the pulmonary artery, upon the establishment of respiration, the duct begins to close, the closure becoming complete from the fourth to the tenth day after birth, according to Gray.

In persistence of the duct, the physical signs noted are, according to Hochsinger, a loud, whirring murmur, heard loudest over the region about the second left interspace, and often transmitted to the arteries of the neck; and marked accentuation of the pulmonic second sound. Upon this latter feature this author lays especial stress, the blood-pressure in the pulmonary artery being decidedly raised by the inter-communication with the aorta, with its higher blood-tension, thus accounting for the accentuation.

The murmur in our case disappeared at the time of the nor-

mal closure of the duct. The child is at this time, four months after birth, well developed, and apparently entirely normal. Anomalies in structure of the heart, and persistent fœtal endocarditis may apparently be properly excluded. We have only to suppose a structural defect or endocarditis, limited to the duct, and causing roughening or stenosis of its lumen, to account for a systolic murmur, which would, as in our case, disappear with the physiological closure of the duct by the tenth day. We assume in this case that the possible endocarditis is no longer active. The point of greatest intensity of the murmur in our case so nearly coincides with that mentioned by Hochsinger that we may overlook the discrepancy.

In closing it should be stated that Hennig believes that we may have single or double fetal heart murmurs, audible *in utero*, but not to be heard after birth, and this in cases in which the possibility of the location of the murmur in the cord is excluded.

JACKSON BLOCK.

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**Adenoid Growths in Children.**—Dr. Ellet Orrin Sisson, in discussing in the *Laryngoscope* the prevalence of adenoid growths in children, draws the following conclusions in reference especially to school children:

In summing up, let me again repeat the statement made in the outset, that the object of this paper is to impress upon you the importance of this condition by reference to some of its complications; for we fear that our familiarity with the methods adopted for its cure, together with their common occurrence, may cause us to pass it by too lightly. Therefore, in conclusion, allow me to sanction and urge the adoption of a measure suggested by Dr. Hannan W. Loeb, one of the leading specialists of this city, in a recent article on this subject, viz.: That the State should provide for the examination of all school children with a view of correcting this common affection and the symptoms which it occasions; and I would add that the teachers in our public schools be taught to recognize this condition, and be instructed to report all cases of mouth-breathing children to a physician, or board of physicians created for that purpose, for examination.—*Maryland Medical Journal.*



## SOME UNUSUAL PHASES OF VACCINATION.\*

BY AUGUSTUS E. BIESER, M.D.,  
New York.

My experience with vaccination will not allow me to formulate the dogma that it is entirely harmless. While I have vaccinated about 250 children in private practice without harm, the history of three of the cases is an instructive commentary upon the reputed harmlessness of vaccine inoculation.

### ACUTE SEPTICÆMIA FOLLOWING VACCINATION.

CASE I.—M. W., aged three and one-half years, was intubated and inoculated with diphtheria antitoxin for a diphtheritic laryngitis by Dr. Geo. Bieser on February 3, 1896, and made an uneventful recovery. After being in perfect health for a year or more I was called to see the child on May 13, 1897. The child had a temperature of 105.3° F. in axilla, 106.3-5° F. in the rectum, vomited, had diarrhœa and was wildly delirious. Just as I was preparing to leave, the child went into convulsions (note the hyperpyrexia) and died, the whole illness, from the time of its inception to the time of its fatal termination, having lasted only three hours.

My diagnosis was an overwhelming acute septicæmia, the result of some malignant, infectious disease of childhood. Malignant diphtheria? There was not even throat redness (much less false membrane) that might be construed as being the possible first stage of a diphtheria. For the same reason scarlet fever was excluded. Intestinal sapræmia? Cases of this character do not die as quickly as this one did, and as a rule, lie in stupor; they give us time to try enteroclysis, or brisk purgation, and thus let us come to a tangible diagnosis. Explosive meningitis? The autopsy held by the coroner did not mention any such lesion, merely stating that death occurred from natural causes. What was it? Upon the left arm was a vaccination pustule, the result of vaccine inoculation by a health officer just eight days previously. You will observe that the symptoms came on just at a time when adults who have smallpox also suffer from, or even die of the secondary septicæmia engrafted on the smallpox. In the absence of any other symptoms which might throw light upon the matter, I cannot be blamed if, rejecting any other hypothesis as being irrelevant to the subject matter at hand, I ad-

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\* Read before the Section on Pediatrics, New York Academy of Medicine, October 14, 1897.

here to my firm conviction that this child died of acute septicæmia, the result of a primary vaccination. Whether the septicæmia was engrafted after the vaccine inoculation, or whether it was engrafted on the system concomitantly with the vaccine inoculation is, of course, difficult to determine. It may have been due to contaminated virus, it may have been due to secondary septic infection of the vaccine inoculation.

#### PURPURA FOLLOWING VACCINATION.

CASE II.—C. B., aged five years, after being vaccinated by a health officer nine days previously, developed on November 25, 1894, a general macula purpuric eruption, ushered in by fever, restlessness, irritability; the eruption was bright red and occurred in the form of crescentic patches or irregular blotches, in short, a measles-like eruption; but there were no catarrhal symptoms and the child had had measles before. Upon pressure, however, some of the spots persisted, showing that they were purpuric, whilst others disappeared on pressure, showing that they were non-purpuric. The purpura were most numerous upon the vaccinated arm, especially in the flexures; in the flexure of the left elbow appeared a blood extravasation one by one and one-half inches; elsewhere they varied from a pin point to a copper cent in size. These purpura are said to be very uncommon after vaccination. But uncommon as they are, denoting as they do disorganization of the blood corpuscles, they cannot therefore be considered harmless phases of vaccination.

#### LOCALIZED VACCINIA FOLLOWING VACCINATION.

CASE III.—C. T., aged eleven years, ten days after a successful vaccination, developed an eruption, which went through the successive stages of papulation, vesiculation and pustulation, upon the vaccinated arm and nowhere else; the pustules came out in successive crops, not simultaneously; they were of the size of podded peas and were all decidedly umbilicated; there was considerable constitutional disturbance; the ulcer left by the primary pustule was a deep penetrating one, of the size of a silver dollar, laying bare the muscle. By opening up all the pustules and instituting aseptic treatment, no pocks remained; but the primary ulcer took a month to heal. Had this eruption been general and accompanied by marked general symptoms, it would have resembled that of smallpox markedly. But its localization and the history of the case made it a localized vaccinia.

Coming down to ordinary vaccinations that can be considered harmless, I have an interesting case of "duplex vaccination" to report. After making a primary inoculation upon the arm of a child, I found a pustule upon the left cheek in about the same stage of development as the one upon the vaccinated

arm, evidently the result of inoculation with the finger nails. Both took. Now the rule in vaccination is that a primary successful vaccination renders the person immune against re-vaccination for a period that is variously estimated by different authors to be anywhere from four to seven years; some give a longer period of immunity, some a shorter period than is here given; some claim re-vaccinations, in rare instances, can be successfully made every two years. When a re-vaccination, however, is made during the period of immunity, it either fails entirely, or false vaccination occurs, in which case only a little inflammation of the skin occurs, without the successive stages of a true vaccination ensuing. What is the explanation of the cheek inoculation succeeding in my case? It seems that for the period of a few days the virus exerts a local effect only, and during the time the body is not immune against re-inoculation. This can be shown in the following way: If you vaccinate a child in two separate places upon the same day, both inoculations are very apt to take. My case of duplex vaccination also seems to prove this contention. If, however, you re-vaccinate after five or six days, you will usually find that the primary vaccination will be successful, while the re-vaccination will be a failure, provided we make the assumption at the outset that the vaccination is to succeed at all. To exemplify this side of the case I cite the following history:

D. H., aged four years, was vaccinated by me for the first time in December, 1895; five or six days after the vaccination, her mother brought her back to me with the statement that the vaccination was going to be a failure. I didn't think so, but more to please the mother than for any other reason that I can remember, I re-vaccinated her child. The primary vaccination succeeded, the secondary one failed.

Before closing I will cite the occurrence of a warty growth upon the site of inoculation on the arm of a boy who had been vaccinated five times previously without success. The sixth vaccination was likewise productive of no result except the occurrence of the warty growth aforesaid.

256 WEST FIFTY-FOURTH STREET.



## Clinical Memoranda.

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### INTUSSUSCEPTION FOLLOWING DYSENTERY IN A CHILD FIFTEEN MONTHS OLD, WITH RECOVERY.

BY H. L. HULETT, M.D.,

Allentown, N. Y.

The case I report I believe to be of interest for two reasons; first, because of its clinical character; second, because of its termination. I first saw the patient, a girl baby of fifteen months, on March 17, 1897, about 7:30 P.M., being called in as I was passing. I carefully examined the child, which was well nourished, and found rather negative evidence, except that it was suffering from colic to a slight extent. I gave it a simple carminative, and a small dose of camphorated tincture of opium, and felt confident it would be in usual health by morning. That night I was recalled with the news that the child was passing blood. Upon my arrival I learned that there had been ten passages within two hours—from 10 P.M. till midnight. To say that I was surprised, after having seen the child only a few hours previously with no symptoms of a serious trouble whatever, will not be doubted.

There was prostration; a temperature of 99°; colic; abdominal tenderness; and tenesmus with small, mucous, bloody stools, frequently passed. The treatment instituted was hot applications across the abdomen; castor oil until its effect was produced, with topical treatment by enemata of starchwater and laudanum. I also gave bismuth subnitrate and ipecac powder by mouth. The treatment seemed efficient, as the passages gradually became less. At first there were as many as thirty or thirty-five during the twenty-four hours, till, at the end of the week the passages were normal in appearance and about three daily. The tenesmus we did not seem to entirely control; by repeated injections of the starchwater and laudanum, though, it was lessened to a great extent.

On March 26th, Dr. Martin, of Findlay, Ohio, who was in the neighborhood, was asked to see the child. He fully concurred with the diagnosis of dysentery and with the treatment, and as

to prognosis thought the child would soon be perfectly well. The child remained in about the same condition until March 29th, when it suddenly appeared worse, there being a sudden constipation present, except very small bloody passages with marked tenesmus.

The further clinical features at this juncture were vomiting, first of food, then bile colored material, finally becoming fæcal; colic of severe type, with the appearance of a sausage shaped tumor in the region of the descending colon.

High rectal injections of hot water with the administration of tincture of opium to limit of dose now constituted the treatment. All food was restricted, save brandy mixed with white of egg, given in small quantity at intervals. The child was so prostrated that hopes of its recovery were hardly entertained, but the parents wishing to do all that was possible to save their infant, Dr. Mudge, well-known as a surgeon in Western New York, was sent for on April 3d. He considered the chances of the child, suffering as it was with very marked prostration, as good without an operation as with one. He was fully of the opinion that the case was one of intussusception following dysentery, doubtless due to the tenesmus, which we had been unable to control. The only change in treatment he advocated was to place the child in a reclining position with the hips elevated and with the left side of body raised. This was done, the other treatment remaining as outlined above. Therefore the picture we have from April 3d to 6th is a child in position indicated, lying in semi-conscious state, the effects of opium being well watched, with the administration of the high hot water injections every six hours. Following this the dose of the tincture of opium was gradually reduced, but the injections were maintained. We also began to give the child teaspoonful doses of peptogenized milk every two hours, very gradually increasing it, and in a few days I was much pleased to be told upon my visit that the child's bowels had moved of themselves. From this time on the recovery was rapid and the child has not only regained its former strength and flesh but has increased in both. I believe that our success with this case was due to the following: Restriction of food, position, absolute quiet, and high hot water injections. Should I encounter another similar case I should follow the same line of treatment.

## AN INFANT OF UNUSUAL WEIGHT.

BY T. P. SATTERWHITE, M.D.,  
Louisville, Ky.

The case I report possesses no especial interest, except that it was a remarkable birth owing to the great weight of the infant. It was the child of Mrs. C. S., and weighed when delivered nineteen pounds. The mother was a multipara; there was not the slightest laceration of the soft parts and she made an unusually rapid recovery. I had a picture of the child taken two weeks after birth. In looking over Lusk's latest work on obstetrics I notice the greatest weight of a new-born infant that he records is eighteen pounds.

Dr. I. N. Bloom said that in Gould and Pyle's recent work on the anomalies of medicine, collected from all medical literature to date, there were recorded many cases where children at birth weighed twenty-two and one-half to twenty-five pounds, and a twin pregnancy in which one child weighed seventeen pounds and eight ounces and the other eighteen pounds.

## MYIASIS IN A NEW-BORN INFANT.

BY A. MODELL, M.D.,  
Philadelphia

On August 4, 1897, I was hurriedly summoned to see an infant that, I was told, was "rotten." Upon my arrival I found a well-developed infant eight days old, evidently quite healthy, but very restless. The external auditory meatus was literally packed with what is commonly known as maggots, some of which were found on the lids of the left eye and also in the nostrils. A weak solution of bichloride caused their prompt dislodgement and permanent disappearance.

The extreme rarity of this affection, especially in the new-born, warrants my bringing it to the notice of the profession

242 FAIRMOUNT AVENUE.



# ARCHIVES OF PEDIATRICS.

DEVOTED TO THE

DISEASES OF INFANTS AND CHILDREN.

DECEMBER, 1897.

Edited by FLOYD M. CRANDALL, M.D.,

*Adjunct Professor of Pediatrics, New York Polyclinic; Visiting Physician,  
Children's and Infants' Hospitals.*

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## THE THYROID TREATMENT OF CREPINISM.

The effects of thyroid feeding in cretinism and myxœdema do not cease with more intimate acquaintance to excite admiration. Thyroid extract has been employed in many conditions with varying success, but in no others are its effects so permanent and unmistakable. The present number of the ARCHIVES contains two papers of great interest describing its effect in cases of goitre. Evidence regarding the action of the remedy and its effects in various pathogenic conditions is steadily accumulating. Upon many of these we are not yet in possession of sufficient knowledge to warrant an expression of opinion. That it is a requisite for normal tissue metabolism, however, there can be no doubt. Absence of the gland or perversion of its secretions is marked by decided and unvarying symptoms.

A recent number of the *British Medical Journal* contains four articles upon the effects of thyroid extract, with reports of cases. The subject is also noticed editorially. Regarding these cases as types of the numerous ones constantly being recorded, the writer believes that it is difficult to find a more marked example of uniformly successful medication. Perhaps the two forms of treatment with most nearly similar histories are those by the salicylates in acute rheumatism and by iodide of potassium in syphilis. Although the exact action of thyroid feeding is not

as yet fully understood, yet it has proved, by the test of many cases and by the lapse of time since it was first introduced, to be one of our most reliable remedies, and this in a class of cases which up to a few years ago had been looked upon as almost hopeless. The condition of a cretin is deplorable, not only as regards physical, but also mental powers. Now, however, the prognosis of such cases under this treatment is most hopeful, and the use of the thyroid gland or its extract may be regarded as one of the most successful therapeutic discoveries of the century. One of the four cases reported in which a mother who had borne two cretins was treated by thyroid extract during the third pregnancy and bore a normal child is of unusual interest.

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#### SOME OF THE DUTIES OF THE FAMILY PHYSICIAN.

The duties of the family physician are limited neither to attendance upon the acutely ill, nor to the administration of drugs. He is frequently called upon to take the charge of delicate children suffering from no distinct morbid condition, whose management involves advice rather than prescribing. In their management every source of irritation and depression must be sought and removed. The general practitioner has, moreover, a certain number of families in his clientèle to whom he is called with frequency and who come to look upon him as an adviser and friend. In such cases a certain peculiar responsibility devolves upon him and he is not doing his whole duty by simple attendance during illness. He is to a certain degree the keeper of the health of all his families, but there are certain ones in the practice of every physician in which this is particularly true. He has an especial duty toward the children of his families during their whole period of growth and development. If they are frail, or the subjects of some diathesis, it should be his duty to counsel with the parents regarding them and not infrequently to offer medical advice and even treatment without special request. It should, in fact, be his duty to see that such children

do not run into preventable dangers—dangers of which the parents know nothing, and therefore cannot foresee.

Among the subjects upon which the doctor's advice may thus be appropriately offered is the question of games and amusements. A child's life is centred so largely in his play-things and amusements that they may become matters of grave importance worthy of thoughtful consideration and by no means below the dignity of the physician. Feeble and puny children are frequently made ill, and are kept in a fretful condition by injudicious amusements. Even strong and healthy ones may be rendered irritable by over-exciting games or prolonged and exhausting play.

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### CHILDREN'S AMUSEMENTS.

There is an undoubted tendency in recent years to over-stimulate children. It begins in the first weeks of life when every opportunity is utilized to play with the baby. This is frequently done with so much vigor that the child is rendered tired and nervous, for children have nerves as well as adults. Many a delicate infant is made sleepless and irritable by excessive fondling and tossing about. Though it seems a hardship it is frequently necessary to forbid all play and frolicking with an infant. Every child, in fact, is better without it; a young infant does not need to be amused.

As the baby grows older and intelligence gradually develops the tendency to over stimulate becomes stronger. The more delicate the child the greater the harm. The parents, impressed with the extraordinary mental capacity of their descendant, frequently do serious injury in their anxiety to develop the mental processes. Thus far it has been a question of entertaining the parents rather more than of amusing the child.

A little later the question of actual amusement of the child arises and the matter is usually and often seriously overdone. People forget that the world is fresh and new to the child and



has not yet become old and stale. They forget that the child's capacity of thought and comprehension is extremely small. The young child is interested in the most simple and trivial things, and it is an unkindness to force complex and difficult amusements upon him. The child enjoys best the amusements which he can most readily comprehend, and his comprehension is very small. Many parents begin too early to induce their children to take interest in their own pastimes. This is particularly true in the case of only children. When a child becomes a man he should, assuredly, put away childish things, but it is unkind to compel him to do so while he is still a child.

There is certainly a growing tendency to engender in children a taste for amusements which are too complex, amusements which overburden the mental faculties, over-stimulate the imagination, and over-tax the physical powers. Happiness in this world results from contentment, and contentment cannot exist when desires and longings are not satisfied. Fortunate, then, is that child who has been reared with simple tastes, is content with simple amusements, and has not been satiated with all the pleasures of life before he has reached manhood. A youth with simple tastes, who has something yet to learn and to enjoy, is far more apt to develop into contented and successful manhood than he who has been forced by injudicious parents to feel that all is flat, stale, and unprofitable.

In the rearing of children many serious errors in the direction of which we are speaking are made through thoughtlessness or lack of experience on the part of parents. The experienced and judicious family physician by timely advice may frequently do much to save his little patients not only from physical ills, but from mental and moral ills in later life.

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#### CERTIFIED MILK.

The production of certified milk in an extensive and really practical manner was first accomplished in Newark, N. J. When first undertaken it was an experiment and the system

adopted was in large part original. It was so well perfected, however, that it has been utilized to a greater or less degree, as a model for every effort in the same direction that has since been made.

Owing to interest which has been excited by the series of papers on the production of milk which appeared in the last number of the ARCHIVES, we publish in the present number certain facts regarding the methods employed in Newark. The success of the experiment in that city must be attributed in large measure to Dr. Coit for his persistence and energy in originating and establishing the work, and to Mr. Francisco for his intelligent and conscientious management of the dairy.

It is clear that the importance of a pure milk supply is being appreciated more and more by the profession. We are pleased to learn that arrangements for securing certified milk have been completed in Hartford. At a meeting of the Hartford County Medical Association held on October 20th, it was voted to appoint a commission with authority to start a certified milk farm in Hartford County. Dr. Walter G. Murphy was the chairman of the committee which instituted the movement and reported to the society in favor of the Newark system. The suggestions of the committee were adopted by the society, and the commission was appointed. It is believed that it will start under very favorable circumstances, as it is fortunate in its dairyman and has the hearty endorsement of the City Board of Health.

It seems to us that the appointment of the commission by the County Society is an excellent idea, as it will not only interest the members of the society in the movement, but it will give the commission a standing and authority which it might not otherwise possess.

## Bibliography.

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**About Children:** Six Lectures given to the Nurses in the Training School of the Cleveland General Hospital in February, 1896. By Samuel W. Kelley, M.D., Professor of Diseases of Children in the Cleveland College of Physicians and Surgeons (Med. Dept. Ohio Wesleyan Univ.); Pediatricist to the Cleveland General Hospital; Consulting Physician to the Cleveland City Hospital; President, 1896, and 1897, Ohio State Pediatric Society; Editor Cleveland Medical Gazette. Cleveland: The Medical Gazette Publishing Company, 1897. Pp. 180. Price, \$1.25.

This volume being composed of lectures delivered before student nurses is designed primarily for the use of nurses and intelligent parents. It contains much, however, which the medical student and even the practitioner can read with profit. It lays no claim to being a complete treatise. Lack of completeness, however, is confined rather to the number of subjects considered than the method of treating those which are discussed.

In the first lecture the literature of pediatrics is briefly considered and there are some interesting facts regarding children's hospitals. This is followed by a most excellent review of the reasons why children require special study and cannot be treated simply as adults of small size. The lecture closes with a description of certain peculiarities in the anatomy in early life.

The second lecture is devoted to an account of some of the peculiarities to be noticed at different periods of life. These periods are divided as follows: (1) the new-born, the term being applied only to infants during the first month; (2) infancy, extending to the age of two and one-half years, or until the eruption of the temporary teeth; (3) childhood, extending from this period until the permanent teeth appear at about six or seven years; (4) youth, extending from the sixth or seventh year until puberty, about the fourteenth or fifteenth year; (5) adolescence, extending from this period until the age of majority.

The physiology of childhood is then considered, and several pages are devoted to a very excellent account of the mental development of children.

The third lecture is devoted to various inherited deformities and diseases and to accidents and injuries. The directions for managing the latter are particularly good.



The next lecture is devoted to symptoms and their interpretations, and forms an admirable chapter. It could be profitably studied by medical men as well as nurses.

The fifth lecture is written with particular reference to the needs of the nurse, being devoted to the management of sick children. The advice given regarding the use of opium, patent medicines, and alcoholic drinks is worthy of particular mention. It is this chapter which might be most appropriately extended in its scope and in places in the treating of the various subjects. The last chapter contains directions for sterilizing, Pasteurizing and modifying milk, and some excellent advice regarding the feeding of infants and children. Had the limits of time permitted, this lecture, also, might have been profitably extended.

The author has very successfully avoided an error common in works of this character, in that his book is well adapted to the needs of the nurse and mother without encroaching upon the domain of the doctor. Except to a slight degree in the paragraph on feeding, we find little or nothing to criticise in this direction. While the work clearly is not designed to supplant the text-books on nursing already in use, it contains much valuable information, presented from a different standpoint from that of existing works on the care and management of children. It is an excellent book and will prove a valuable addition to the library of the nurse and young doctor. It can, also, be placed in the hands of mothers with the assurance that it contains nothing that can result in harm.

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**Transactions of the British Orthopædic Society.** Vol. I., Sessions 1894-5. Published by the Society. Birmingham, 1896. Pp. viii. 51.

This little book of transactions is the first issued by the new society. It contains the constitutions and rules and a description of the founding of the society in addition to the papers usually found in such works. It covers the proceedings of the first annual meeting and a number of general quarterly meetings. While the number of papers presented at these meetings was comparatively small they were almost without exception of high merit and give promise that the society will be one which will do good work.

## Society Reports.

### NEW YORK ACADEMY OF MEDICINE.

#### SECTION ON PEDIATRICS.

Stated Meeting, October 14, 1897.

J. HENRY FRUITNIGHT, M. D., *Chairman.*

#### *Hodgkin's Disease.*

DR. CHARLES E. NAMMACK presented a boy suffering from this disease. He said that according to Osler this affection was characterized by progressive hyperplasia of the lymphatic glands, anæmia, and sometimes by secondary lymphatic growths in various parts of the body. It was probably an infectious process, but its nature was not as yet understood.

The patient, L. W., twenty years of age, had always been considered delicate, although he had had none of the early diseases of childhood. There was a history of tuberculosis in his family. His present illness was said to date back only to last June, at which time it had been noticed that he had dyspnœa on slight exertion. He also had pain and swelling in the ankles, and had cough with some expectoration. Nine years ago there were enlarged glands on the right side of the neck, and six years ago the glands on the opposite side were also seen to be increased in size. When he first came under observation the thyroid and spleen appeared to be normal, but he was decidedly anæmic, the ratio of the red blood cells to the white corpuscles being 42 to 1. Under the administration of Fowler's solution the ratio rose to 100 red to 1 white cell. The physical examination of the chest and the microscopical examination of the sputum were both negative as regards tuberculosis. There was no evidence of syphilitic taint.

Regarding the diagnosis, Dr. Nammack said that true leukæmia had been excluded, because of the absence of splenic enlargement and of the characteristic myelocytes and nucleated red corpuscles. Moreover, in true leukæmia the spleen was first enlarged, and the lymphatic glands did not form the large bunches observed in the pseudo-leukæmia of Hodgkin. The slow and comparatively painless course of the present affection would seem to exclude malignant lymphomata.

The prognosis was almost uniformly bad, but the duration

was quite variable. Occasionally, arsenic seemed to act almost as a specific, and it had been alleged that cures had been effected by the use of thyroid extract, and also by the administration of bone marrow.

*Tubercular Meningitis; Lumbar Puncture; Recovery.*

DR. WILLIAM L. STOWELL exhibited a five-year-old boy, whom he had first seen about the last of August. According to the history the attack had begun suddenly about August 1st, with a convulsion and two or three days of drowsiness. When first seen by Dr. Stowell the boy was stupid and cried out sharply at times. His pulse ranged between 120 and 150, and was occasionally intermittent. He lay curled up, with the head thrown backward, and the abdomen slightly flattened, and his respiration was of the Cheyne-Stokes type. On September 1st he became totally blind; the pupils were widely dilated and did not react to light. A diagnosis was made of tubercular meningitis, and by means of lumbar puncture, about 10 c.c. of clear fluid were slowly drawn off. Tubercle bacilli were found in this fluid at the first examination, but not subsequently; hence it was barely possible that there had been some error in the first examination, and that it was, after all, only a seeming confirmation of the clinical diagnosis. Dr. Stowell said that he had been much astonished to see the child brought to him at the dispensary about a week later. Examination then showed the same condition of vision and of the pupils, and the outlines of the disk were hazy, but not swollen. Since then the eyes had improved, so that at present the boy was able to discern fingers held before him. The medicinal treatment had consisted, for the most part, in the use of iodide and the bromides.

DR. HENRY KOPLIK said that he was sorry that Dr. Stowell had not more confidence in the results of the first microscopical examination.

DR. H. W. BERG said that he had seen a case in which the father of the child had died of pulmonary tuberculosis, but he had given a history of a syphilitic infection. As Dr. Berg had treated this child with very large doses of iodide, and the little one had recovered from his supposed tubercular meningitis, he had always been uncertain as to whether the case was syphilitic or tubercular.



*New Tubes and Instruments Used in Intubation of the Larynx.*

DR. LOUIS FISCHER exhibited some modified intubation instruments. Having noticed the difficulty experienced by some operators in introducing the ordinary tube, it had occurred to him that the introducer might be improved. He had his tubes made of hard rubber—a material that was both clean and cheap—weighting them with lead, and corrugated to prevent their being coughed out. An occasional source of difficulty was the obturator, which was liable to become corroded, and even break off and drop in the larynx. He had accordingly done away with the obturator, and so constructed his introducer that it gripped the tube firmly by the head or flange. His extubator was also convenient, as an automatic catch held the tube firmly without relying on the pressure of the operator's hand.

DR. H. W. BERGE thought it was fortunate for the fame of intubation that Dr. O'Dwyer's introducer and not this new one was first offered to the profession. The shape of this new instrument was such that it must be exceedingly difficult to pass over the epiglottis with it and insert the tube quickly into the chink of the glottis. In his opinion, the corrugations on the tube were both unnecessary and dangerous. They were unnecessary, because, in his experience, at least, it was a rare thing for the tube to be coughed out. It was dangerous, because it would almost certainly abrade the mucous membrane when it was inserted, and so give rise to new sources of diphtheritic infection. The cases in which the tube was expelled from the larynx by coughing were of two classes, viz.: (1) Those in which the child was wearing a tube too small for the size of its larynx, or where the tube had become loose by reason of a reduction in the swelling; and (2) those troublesome cases in which there was post-diphtheritic paralysis. In the latter case a corrugated tube would not be retained any better than the smooth one.

DR. FISCHER replied that these criticisms were not founded on an actual personal experience with the new instruments. He referred to one of his cases, in which the tube had been coughed up and death had occurred before aid could arrive.

DR. WALTER L. CARR also thought it would be difficult to get the tube into the proper position in the larynx before the introducer was released. It was desirable to keep the intubation

tubes as smooth as possible, yet the new introducer had a tendency to roughen the head of the tube.

*Tubercular Infection During Ritual Circumcision.*

DR. MARTIN W. WARE reported the case of C. N., an infant of three months, who had been born of healthy parents. The child had been circumcised according to the ritual when one week old, and about a week later the mother had noticed that the wound was open and inflamed, and the inguinal glands were enlarged. It was not for two or three weeks more that the child was brought to the Good Samaritan Dispensary, and then there was a well-defined ulcer on the prepuce, with moderate secretion. There were suppurating buboes, which were incised and a considerable quantity of pus evacuated. The case was first looked upon as one of syphilitic infection, and accordingly, after curetting the ulcer, the patient was given anti-syphilitic treatment. The local condition, however, grew worse, and the diagnosis was changed to tuberculosis. A slide was exhibited under the microscope in proof of the tuberculous nature of the infection.

DR. WARE said he had collected twenty-one cases of infection of this kind during circumcision, ten of them having been operated upon by one individual, who subsequently died of pulmonary tuberculosis. Of these ten cases, three died of tubercular meningitis, and the diagnosis was corroborated by autopsy.

DR. HENRY KOPLIK said that twelve cases of infection during circumcision had fallen under his observation, but most of them had been syphilitic. When the case just reported had first come under observation the whole inguinal region had been phlegmonous, and there had been peculiar cheesy nodules along the cut.

*Streptococcus Enteritis with Demonstration of Bacteriological Specimens.*

DR. E. LIBMAN reported two cases of streptococcus enteritis that he had had an opportunity of studying in the clinic of Professor Escherich, and exhibited the cultures and bacteriological specimens.

The first case was that of a child of two years and a half, who had been taken suddenly ill with vomiting, diarrhœa, and high fever. For the first three days the stools were numerous

and consisted of greenish mucus. After the third day the stools were less numerous, and more feculent. The treatment had comprised attention to diet and the administration of tannalbin.

The second case occurred in a child of eight months. There were vomiting and diarrhœa, scanty and albuminous urine, retraction of the abdomen and a temperature at first of 101.5° F. There were eight or ten greenish stools a day, and the child died on the fourth day. The autopsy showed fatty degeneration of the heart, kidneys, and liver, and slight splenic enlargement. The mucous membrane of the small intestine was swollen, and presented pin-point hemorrhages. Just above, and just below the ileo-cæcal valve the mucous membrane was thickened and swollen. The microscope revealed areas of small round cell infiltration in the sub-mucosa, and marked intra-glandular inflammation. The heart, liver, kidneys and spleen contained streptococci. In the early stools were an enormous number of streptococci. The blood showed only streptococci, but the urine contained both the streptococci and colon bacilli. The streptococcus in these cases was that described by Hirsch.

DR. KOPLIK said that Fischer, of Prague, had first called attention to this not infrequent form of septic diarrhœa, and the subject had also received careful study at the hands of Dr. Booker, of Baltimore. These infections of the bowel explained many complicated diseases, such as pneumonia.

THE CHAIRMAN said that the paper explained the septic nephritis that so commonly developed in connection with cases of diarrhœa.

#### *Some Unusual Phases of Vaccination.*

DR. A. E. BIESER read a paper with this title. (Page 909.)

DR. ROWLAND G. FREEMAN said that he thought our knowledge of variola and vaccinia had advanced sufficiently to allow of the acceptance of the following definition: "Vaccination is the conference of artificial immunity by the inoculation of the micro-organism (as yet unknown) of smallpox, modified by its passage through a relatively insusceptible animal." If this were accepted it should teach us to be careful in vaccinating to introduce, as far as possible, only this organism, either when vaccinating or during the period of active reaction. If this were done



we should not see many "unusual phases of vaccination." The complications of vaccination were more frequent and serious than many believed. These complications were: inflammation of the adjacent skin, of neighboring lymph nodes, suppuration of the connective tissue, erysipelas, ulceration, and acute and chronic skin diseases. Deaths directly the result of vaccination were comparatively rare, yet were sufficiently frequent to demand our attention. They were usually due to germ invasion after the vaccination. While it was not possible to absolutely exclude all organisms but the specific germ of smallpox, it could be done approximately by the use of glycerinated lymph, which was more than could be said of the old ivory points. The glycerine had a bactericidal action on the contaminating bacteria, but no such action on the micro-organism of smallpox, at least not for a number of months. Another advantage of this glycerinated lymph was that it was sold in capillary tubes, thus affording another safeguard against contamination in handling. By the use of aseptic instruments and of the glycerinated lymph of the New York Board of Health there should be very little danger of contamination at the time of doing the vaccination. The subsequent contamination could only be avoided by the use of a proper protective dressing. It was necessary that there should be a free circulation of air through this dressing. The speaker recommended a Cowan vaccination shield, covered by two or three thicknesses of gauze bandage. The present method of forced vaccination without providing a clean dressing to protect from the friction of dirty clothing, the speaker thought was antiquated and unfair, particularly to the poor.

DR. J. H. HUDDLESTON said that the cases cited in the paper did not seem to him to be very unusual. Vaccination was too commonly done in just such a way as to favor infection. Formerly physicians had been unable to obtain a pure vaccine lymph free from contamination, the so-called "germ free" vaccines having proved to be inactive. At the present time, the glycerinated lymph could be obtained from our Health Board, with the assurance that each batch of lymph had satisfactorily passed the tests made for the presence of other ordinary pathogenic germs.

Regarding the cases presented, he said that even if one were to admit that the first case of septicæmia was directly due to the vaccination, one would still be left in considerable doubt as to the exact part played by the vaccination, as this was evidently

an isolated case. He had been surprised to hear the reader of the paper speak of purpura as a not uncommon sequel of vaccination, for, he had never heard or met with this statement before. It had been repeatedly asserted by different observers that erysipelas was a common sequel of vaccination, yet a study of the most carefully compiled reports, and inquiry among medical practitioners in this city, had rather substantiated the view that it was not a true erysipelas, but a dermatitis. Deep ulceration was certainly quite common after vaccination, but could be to great extent avoided by the use of the proper protective dressing so wisely insisted upon Dr. Freeman. It was the rule that when a second vaccination was made within three or four days after the first one, that the second vaccination developed more rapidly, and that both passed through the later stages simultaneously.

DR. LOUIS FISCHER said that it was necessary that the surface to be vaccinated should be carefully cleansed, yet it had not been found altogether satisfactory to do so with such antiseptics, as bichloride. He had seen a fatal case of septicæmia occurring nine days after vaccination, and associated with purpuric spots.

DR. G. F. MORRIS said that the remarks that he would make on vaccination were based on an experience of seventeen years, during which time he had done 250,000 vaccinations, and had made over a million and a half inspections of vaccinations. As to the use of antiseptic lotions, prior to vaccination, he said that he recalled one case in which, after the skin had been subjected to scrubbing with alcohol and ether, the child had been vaccinated, but had subsequently developed an unusual dermatitis. A great deal of unnecessary trouble was caused by making too many and too large scarifications. He did not approve of the European practice of making several simultaneous vaccinations. The ulcer produced by vaccination he said was of no consequence whatever. The reason that many of these ulcers were so slow to heal was, that the arm was kept bandaged up in such a way as to obstruct the drainage and prevent a free circulation of air. Most of the accidents occurring after vaccination were caused by breaking the vesicle or pustule. It was not at all uncommon for children to carry the virus to other parts of the body, in this way producing secondary vaccinations. It could not be said that there was any distinctly typical course for a

successful vaccination; in some few cases the vesicle would not form for two or three weeks. In others the vesicle developed in two or three days. Even the pitting, upon which the books laid so much stress, was no test of the protective power of a vaccination—indeed, it was more commonly seen in improper, than in proper vaccinations. In one case in which the scar presented a beautiful pitted appearance he had been about to pass the child as properly vaccinated, when he learned that the cicatrix was not the result of vaccination, but of a dog-bite! This same pitting could be intentionally produced in various ways, irrespective of the quality of the vaccination. It had seemed to him rather strange that the very voluminous literature of vaccination should be silent regarding a very common form, known as the fungus, or the non-protective hemorrhagic vaccination. He had scratched through such a vaccination, rubbed in good vaccine virus, and produced a typical vaccination on top of the old blood blister. It was quite commonly believed that vaccination could not be done on an old cicatrix, but he had developed a perfect secondary vaccination on top of an old and very hard scar. He had known of two or three instances in which vaccination had been successfully employed for the obliteration of *nævi*. It was not possible to speak very positively regarding the period of protection afforded by vaccination. He had vaccinated children in infancy, and again at the age of five years, and had developed a typical secondary vaccination. The younger the child, the more probable that it was not properly protected.

DR. CARR said that it had been found that antiseptic applications prior to vaccination were very liable to retard or interfere with the success of the vaccination. In the use of protective dressings, great care should be exercised that a free circulation of air was secured.

DR. BERG said that he had seen two cases of inguinal adenitis follow vaccination on the lower extremity, and he thought physicians should make it a rule to refuse to vaccinate on any part of the body except the arm. As he had met with one fatal case of measles following close upon vaccination, he thought the health authorities should be careful not to do vaccinations in households in which there had recently been any of the acute exanthemata.



DR. MORRIS said that it was a well established fact that secondary vaccinations were more likely to produce auxiliary or inguinal adenitis than primary vaccinations, the reason being that these vaccinations were done on older children or on adults, and the parts were not kept so still.

DR. FREEMAN said that while bad results had been noted after vaccinating adults on the leg, this did not seem to apply to children, even though old enough to be running around. Thus, 70 children in the Foundling Asylum had been vaccinated on the leg, and although they were, for the most part, run-about children, there was not a bad result in any of them.

THE CHAIRMAN referred to a case of tetanus that he had seen many years ago after a vaccination. A boy of eight years had been vaccinated by a health officer about six days before the onset of the tetanus, and the absence of all other signs of traumatism had then led him to believe that the traumatism of vaccination—not the vaccination itself—was responsible for the tetanus. In the light of our present knowledge, the case was more clear, for the boy lived in a place where he could play at will in the garden and among the horses, and hence where he was exposed to conditions now known to be favorable to the entrance of the tetanus germ.

DR. BIESER, in closing the discussion, mentioned several writers who had referred to purpura as a sequel of vaccination. While the causes reported might not seem rare to men who had done thousands of vaccinations, they were certainly rare in the experience of general practitioners.

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**The Dangers from Blisters.**—Comby reports an instance which should be a warning against the use of cantharidal vesication in children. The symptoms suggested the existence of meningitis: stiffness of the neck, agitation, delirium and anuria. Auscultation showed only a few insignificant râles. The temperature was 102.2° F., and the anuria was almost total. These symptoms disappeared after the use of prolonged warm baths and diuretic drinks. After some days of fever, convalescence was established. — *Journal des Praticiens, Dublin Medical Journal.*

## Current Literature.

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### HYGIENE AND THERAPEUTICS.

**Newton, Richard C.: Modified Milk and Modern Dairy Methods.** (*Transactions of the Medical Society of New Jersey.* 1897.)

The author, after discussing the advantages of the various kinds of milk for infants' food enters into a discussion of various properties of cows' milk. In discussing the subject of the reaction of milk he refers to the statement of Rotch, that cows pastured on the blue grass of Kentucky, in which the proportion of nitrogenous matter to the other ingredients has been found to be about 1 to 4.5, give neutral or alkaline milk. This would also seem to be true of the well-known Sheffield Farms milk, which comes from Delaware County, New York State, where much limestone is alleged to abound. Also the so-called Rockland milk, which comes from limestone regions, is said to possess the same peculiarity. There are a number of dairy farms on the islands of Lake Ontario where the pasturage grows amongst the limestone rocks. The milk of these dairies, as he is informed by a reliable observer, can be poured without cooling, into cans and brought ashore, in some cases a distance of eight miles, in a row-boat and thence shipped to Syracuse and other points without souring. Rotch says that a daily feed of ten pounds of sugar beets to each cow, or even to a quarter of the herd, will cause the milk of a dairy to be neutral or alkaline. If this is so, it would appear probable that the animal requires hydrocarbonaceous rather than nitrogenous food for the production of alkaline milk.

If ordinary milk poured without cooling into cans and carted away to the consumer in hot weather will develop tyrotoxin, while milk originally alkaline can be moved long distances without cooling and will not sour or undergo other serious change, and if this quality of alkalinity can be secured by providing suitable diet, the commercial value of the discovery must be almost without limit. So far as the author knows, no extended observations have been reported on the superiority of alkaline over acid milk as an infant food, and this phase of the question offers also an attractive field for research.

After a brief discussion of the milk laboratory, which the author highly commends, he refers to the cream separator, which

he believes to be one of the most important of modern methods of preparing cow's milk for infants' food. In conclusion he sums up his observations as follows:

1. Some occult but irreparable injury occurs to milk commensurate with the lapse of time since the milking and the amount of agitation to which it is subjected.

2. While this change is delayed and modified by cleanliness and modern dairy methods, especially by a continuous low temperature, it cannot be prevented.

3. Therefore, milk should be fed to infants as soon after the milking as possible and should receive the minimum of agitation or movement.

4. The modern high grade cow is a specially developed milk machine and is consequently very liable to disease, and is remarkably sensitive to changes of diet, water, shelter and treatment.

5. It is by no means settled that for the production of infants' food, the ass or the mare, or even the goat, might not be superior to the cow.

6. The modern cow is especially liable to tuberculosis, and this liability increases in geometrical progression with the number of cows kept in one stable and the number of hours in the twenty-four during which they are housed.

7. With our present knowledge the conclusion is inevitable that all cows' milk intended for any form of human food should be Pasteurized and aerated immediately after milking, and then kept at a uniform temperature of about 40° F.

8. The spread of tuberculosis amongst cattle can be greatly modified, if not prevented, by, first, separating them into very small herds—say, for instance, into squads of six—which can be fed, milked and cared for by one man; and second, by keeping the cattle out of doors just as many hours as possible during the twenty-four; and third, by sterilizing all the milk which is fed to the calves: and fourth, by keeping the latter away from other cattle and from all sources of infection.

9. To ensure healthy cattle, they should be housed during the winter in high, dry stables into which the sun's rays shall penetrate all day long.

**Certified Milk in Newark.** (Seventh Report of the Medical Commission.)

These reports are issued at short intervals by the Commission of Medical Men appointed to supervise the production of certified



milk. The objects of this report are to furnish to the profession reliable data concerning an important natural food; and to record a systematic effort to influence the production and proper handling of milk intended for clinical purposes. It is sought to accomplish these results through a rigid legal supervision of methods imposed upon a dairyman by physicians.

The second and third pages of the report contain the certificate of the chemist, Prof. Leeds, together with a full analysis of two samples of milk. Such analysis appearing in each report not only forms a guarantee of the quality of the milk, but also an excellent working guide to the practitioner in prescribing. The bacteriological reports by Dr. Freeman form valuable guides as to the purity of the milk and are a constant stimulus to the dairy-men in carrying out every detail designed to secure clean milk, it being understood that the number of bacteria present is in a large measure an indication of the cleanliness of the sample. The reports of the veterinary surgeons are also of great importance. The inspections are very carefully made of the following features of the dairy:

(1) The physical condition of the animals, and their hygienic treatment. (2) The quality and the amount of rations given to the animals. (3) The quality of the water supply from all sources. (4) The sanitary condition of the stable. (5) The sanitary condition of the surroundings. (6) The hygienic condition of the attendants.

The following clause from the contract is reproduced from the report and shows an important feature of the scheme, *viç.*, that all expense is borne by the dairymen, while the reports are made exclusively to the commission, the latter body having no pecuniary interest in either expenditures or receipts: "The party of the second part (the dairyman) further agrees to pay for chemical and biological examinations of the aforesaid Certified Milk, and to defray the cost of bi-monthly inspections of his dairy stock; the chemist, the bacteriologist and the veterinary surgeons shall be chosen by the parties of the first part (the commission), to whom they shall render their reports in writing."

The members of the commission disclaim any pecuniary interest in the sale of this product; and assume no obligations except the enforcement of the contract, and the publication among physicians of the findings of their experts.

The commission in Newark was extremely fortunate in find-

ing a dairyman who not only appreciated fully the details necessary to secure pure milk, but was willing to carry them out conscientiously. One of the greatest difficulties encountered in some places has been the inability to find a dairyman who would carry out the many details so necessary to the successful production of pure milk. This is largely due to ignorance on the part of the dairymen and an impression that many of the details are hobbies originating with medical men who know nothing of the dairy business. They, therefore, require an object lesson and one of the most important and encouraging results of the certified milk movement, wherever it has been introduced, has been the improvement of the general milk supply. Evidence of this comes from almost every place where this method has been introduced.

The originators of the scheme in Newark were particularly fortunate, therefore, in finding a man of large practical knowledge in the production of milk, who was already conducting a dairy of great perfection. His aid has been of great value in making the movement a success. A prominent member of the commission recently wrote regarding him as follows: "Mr. Stephen Francisco is deserving of much praise for the efforts he has made to carry into effect this plan to raise the standards of milk, and his willingness to co-operate with the physicians in their work in this direction. He is the first to comply with so exacting a contract, and his relation to the scheme has been in large measure disinterested. He is still enthusiastic and is disposed to follow the commission's suggestions even when it is a pecuniary disadvantage."

The following item regarding the feeding of the cows may prove of interest: The rations given to the animals are as follows, and will be employed while Prof. Leeds makes a series of analyses; the feeding is under the direction of the experts and is determined with reference to product desired:

FEED: 10 pounds corn meal.  
2 pounds wheat bran.  
6 pounds bruised barley sprouts.

FODDER: Morning, clover and timothy hay.  
Evening, ensilage.

The following experts are employed by the commission: Prof. Albert R. Leeds, Ph. D., chemist; Rowland G. Freeman, M.D., bacteriologist; Prof. Alexander Liautard, M.D., D.V.S., consulting veterinarian; William B. E. Miller, D.V.S., supervis-

ing veterinarian; Walter Runge, D.V.S., veterinarian for the Board of Health, Newark, New Jersey.

The following is the personnel of the original Commission: Henry L. Coit, M.D., Newark; Theron Y. Sutphen, M.D., Newark; William B. Graves, M.D., East Orange; Charles H. Bailey, M. D., Bloomfield; L. Eugene Hollister, M.D., Newark; William Pierson, Jr., M.D., Orange; James S. Brown, M.D., Montclair; George A. Van Wagenen, M.D., Newark, N. J.

**Editorial: The Treatment of Cretinism by Thyroid Extract.** (*The Lancet.* 1897. No. 3866.)

At first introduced for the treatment of myxœdema by Dr. George R. Murray and others, feeding with thyroid gland or its extract has been employed in numerous conditions with varying success, but by far the most satisfactory results have been obtained in myxœdema and cretinism.

Four original articles in our present issue bear testimony to this. Especially interesting is one bearing the title "Sporadic Cretinism," by Dr. A. Gordon Paterson. He describes the case of a child affected with cretinism who was brought to him at the age of eleven months. The effects of the thyroid treatment were immediate and remarkable, and steady improvement had been maintained for a period of five years. The mother gave birth to a second child which was an exaggerated counterpart of the first, and which only lived for twenty minutes; and then follows the most interesting part of the paper. The fact of the mother having given birth to two cretins in successive pregnancies offered a strong presumption that she would, unless treated, give birth to a third, consequently when the woman again became pregnant she was treated from the beginning of the third month by thyroid extract in the form of tabloids. Labor came on naturally and at full term and was easy. The child was a fine healthy female, indistinguishable from any other infant in appearance. Another article by Dr. T. Telford-Smith draws attention to the fact that one of the most marked among the many other signs of development produced in cretins during the administration of thyroid preparations is the rapid increase in stature, and he finds that this rapid growth of the skeleton leads to a softened condition of the bones, resulting in a yielding and tendency to bend in the cases of those which have to bear the weight.



**Eserich: Tannigen in the Summer Diarrhœa of Children.** (*Jahrbach für Kinderheilkunde.* B xlv., H 3, 4.)

Tanningen has been employed by the author in many cases of subacute and chronic diarrhœa. The results were most satisfactory. The author had never experienced before in his management of this trouble such prompt and lasting results.

Usually on the second day after beginning the treatment, a change for the better occurred in the diminished amount of mucus in the stools and by the much less quantity of water. After a few days' treatment, the stools returned to the normal. When the passages become normal, the drug must be discontinued or obstinate constipation may follow.

The dosage for an eighteen months old child is 0.25. For older children, 0.5, to be given four to six times daily. It may be mixed with the food. The author never saw unfavorable results. They are less satisfactory, however, in the acute cases, with their frequent stools. It is better to wait until this stage is passed.

**Kiaus: Tannigen in the Intestinal Disorders of Infants.** (*Jahrbach für Kinderheilkunde.* B xlv., H 3, 4.)

The author used tannigen in twenty-two cases of subacute, or chronic diarrhœa. Many of the patients were rhachitic. The remedy proved itself of considerable value in the management of this affection. The desired results were more promptly brought about and it was thought that more reliance could be placed on tannigen than on any other remedy.

The improvement was usually noticed on the second or third day. The stools diminished in frequency, and improved in character.

The diet must be carefully regulated. The dosage varied from 0.1 to 0.3, four or five times daily. It is well to continue the remedy some days after apparent recovery, to prevent relapse.

It is better to administer tannigen in some insoluble media.

**McAlister, Alexander: Serum Therapy in Diphtheria: Its Present Status.** (*Journal American Medical Association,* 1897. Vol. xxix., No. 4.)

But little attention was given by the profession to the subject of diphtheria antitoxin before the meeting of the Eighth International Congress of Hygiene and Dermography at Budapest, Hungary, in September, 1894, when Roux presented a paper reporting 500 cases treated with antitoxin. Since then the remedy

has been extensively used and reported upon in every civilized country. Recommended by the great body of laboratory workers, endorsed by thousands of physicians, both in hospital and private practice, and welcomed by the common sense of all the people at large, antitoxin has become the most widely endorsed and most generally employed of all remedies. Though confronted at first by the fiercest opposition and materially retarded by the unbridled enthusiasm of some of its advocates, diphtheria antitoxin has, within the brief period of three years, proved itself to be specific in the full sense of that term. In defense of this view the author quotes from Holt's work on Diseases of Infancy and Childhood: "Antitoxin is a specific remedy for experimental diphtheria in animals. Experience is now sufficient to justify the statement that it is specific in man, and in just the degree in which we can fulfill the conditions which are essential in experimental diphtheria. Gratifying as were the results with the serum treatment, they have been constantly improving and there is every reason to believe that with larger experience both in the preparation and the use of antitoxin, still better results will yet be reached. Certainly there is no remedy for any disease that has more testimony in its favor, than has now diphtheria antitoxin."

Continuing, he says, it is interesting to note how many eminent medical men and prominent medical magazines, after openly opposing antitoxin, or treating it with stolid indifference, have joined the ranks of its advocates. The experiences of the last nine months, both in the employment of the remedy and the collective study of results, have been such, and the evidence in its favor so overwhelming, that the physician who refuses to give the remedy a place in his medical armamentarium, has his motive for so doing put in question. Every legitimate objection to the remedy, the author believes, is fully overcome in the employment of concentrated serum, which was introduced during the spring of 1896, by the Mulford Co., and which is now so generally endorsed. Speaking of the so-called fatalities from the use of the remedy, he recalls that every other new remedy has had similar charges made against it. He mentions as notable instances, quinine, the coal tar derivatives, morphine, ether, chloroform, etc. He calls attention to the fact that in the early days of hypodermic medication, it was common to attribute sudden deaths to the use of the needle.

It is admitted that five deaths followed the injection of anti-toxin in a manner that cannot be satisfactorily explained. In three of these the remedy was used for immunizing. In all these cases untoward symptoms appeared immediately upon injection of part or all of the serum, and death followed in from five to eight minutes. It is pointed out that virile germs and ptomaines, even when nurtured in an incubator, are not capable of such results in small animals, much less in a human being. The total number of antitoxin injections already made, is variously placed at more than two millions. In view of this large number, the five unpleasant cases, to say the least, are not satisfactorily explained. If it be conceded that there is an element of risk in the employment of antitoxin, this must be placed at one two-thousandths of one per cent., while the gain in recoveries range from 25 to 30 per cent. over all older treatments.

**Johnston, William W. :** *The Influence of School Life Upon the Health of Children.* (*Practical Medicine.* 1897. Vol. viii., No. 3.)

After an extended review of this subject based upon data obtained both in this country and abroad, the author arrives at the conclusion that it is clear that wherever investigations into the health of school children have been undertaken, the following facts have been ascertained, namely:

1. That there is a large amount of ill health among school children.
2. That this ill health is due to a variety of diseases and disturbances of functions.
3. That the same diseases and disturbances exist everywhere and are constantly present.
4. That they are aggravated by the conditions of school life.
5. That they are increased in direct proportion to the number of hours devoted to study.
6. That they often lead to a premature withdrawal from school, and are manifest in a large proportion of those who remain to the end.

**Stokes, W. R., and Wegefarth, A. :** *The Microscopic Examination of Milk.* (*Medical News.* 1897. Vol. lxxi., No. 2.)

The authors report an extended series of observations made to determine the value of microscopical examinations of milk, from which they conclude that garget, or inflammation of the



udder and teats, is a not unfrequent condition among the many herds supplying milk to various cities or communities.

Milk from such animals often contains many pus cells, and the accompanying organisms of suppuration.

The study of an epidemic described by them, as well as the important work of Booker and others, certainly strongly suggests that such milk is capable of causing the various forms of gastro-enteritis, especially in children and infants.

The microscopic examinations of the centrifugalized sediment of the milk from a herd of cattle if found to contain an excessive amount of pus, should suggest a careful inspection of the herd.

The chance of infection from drinking milk from a large herd can be lessened by making a microscopic examination of the centrifugalized specimen from each cow, and by the exclusion of such cows from the herd as may be found to contain an excessive amount of pus in their milk.

The standard for exclusion must of necessity be arbitrary, but following the methods above described, an average of more than five pus cells to the field of the oil immersion lens should exclude an animal from the herd.

**Jones, E. C.: The Medical Inspection of Schools.** (*Medical and Surgical Reporter.* 1897. Vol. lxxvi., No. 21.)

It is a well-known fact that the schools tend to increase, by the necessarily close contact of the children, the spread of contagious diseases. This statement is abundantly sustained by the daily experience of physicians, who are frequently able to trace the contagious disease in a child to his attendance at school. Some very striking figures, also confirmatory of this statement, are published by the Board of Health of Boston. This table contains also all the cases of diphtheria reported in Boston for 18 years, arranged by months: January, 2185; February, 2391; March, 2252; April, 2074; May, 2185; June, 2185; July, 1573; August, 1509; September, 1840; October, 2915; November, 3415; December, 3593. This table shows that the months in which the lowest number of cases are reported are always during the vacation term, and the months when the highest number of cases occur are always in cold and shut-in months.

The following figures are in the same line: The results of the examination made in the Boston schools from November 1,

1894, to October 31, 1895, are as follows: Fourteen thousand, six hundred and sixty-six children were examined, of whom 9188 were found sick. The number found sick enough to be sent home was 1745. Of these, 427 were suffering from contagious or infectious diseases, as follows: Diphtheria, 70; scarlet fever, 26; measles, 110; whooping cough, 28; mumps, 43; pedicularis, 66; scabies, 42; congenital syphilis, 8; chicken-pox, 34.

These children were all in their seats, with the risk of spreading contagious diseases to other children. It is impossible to compute the number of children saved both from contracting disease and from death by the removal of these 427 centres of contagion from the school.

Still further proof of the statement that the schools disseminate contagious diseases is found in the striking result of the first day's inspection of the schools in New York. On March 29, 1897, there were 4255 children examined, with the result of finding 14 cases of diphtheria, 3 of measles, 1 of scarlet fever, 3 of mumps, 8 of chicken-pox, 8 of skin diseases, 35 of contagious eye-disease and 55 parasitic diseases. When we consider that each child afflicted with a contagious disease (and the whole number in the New York schools amounted to 127) came into contact with dozens of other children, it is easy to see how rapidly and terribly contagion may be diffused through the schools.

The danger of contagious diseases being transmitted through the schools has been recognized for a long time, and during the last ten years has been actively commented on, and various remedies proposed; for instance, in 1882 the Boston Board of Health sent a communication to the School Board recommending that all school-houses and school furniture be disinfected once in two weeks. Again, in 1894, it was recommended by the same board that the desks, chairs, window-sills and everything likely to be handled by the children, should be periodically disinfected by washing down with a solution of corrosive sublimate. In 1890 the Boston Board of Health recommended the daily medical inspection of schools, but it was not until the city had been visited by a severe epidemic of diphtheria, that the authorities awoke to the immediate necessity of such an innovation. In November, 1894, such a plan was put into operation.

The best evidence of the success of this experiment is the

fact that New York has lately followed suit, and on March 29th, of the present year, a system of daily inspection of the schools was first instituted in that city.

Boston was the first city in the United States to make use of this method of prevention of disease, and it is a significant fact that Boston was also in the lead in the employment of vaccination in America, and that Philadelphia was ten years in following the example set by Boston in this method of preventing one of the most loathsome diseases with which humanity has to contend.

With the example and experience of Boston and New York before use, it seems incumbent upon Philadelphia to take up this matter of daily school inspection, and by this means reduce, if possible, the terrible amount of suffering and mortality from contagious diseases among school children.

Just the method best suited for our city would have to be developed, but probably the inspection could be employed along the same lines as it is employed in Boston and New York. In New York the medical inspectors are appointed under rigid civil service rules and probably under such a just method the service of those best fitted for the work could be obtained. The cost of such an inspection, as shown by Boston and New York, is not excessive, and in view of the results expected to be obtained, such cost is an inconsiderable objection.

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## MEDICINE.

**Griffith, J. P. Crozer: Fœtal Typhoid Fever and the Widal Reaction.** (*The Medical News.* 1897. Vol. lxx., No. 20.)

The transmissibility of certain infectious diseases from mother to child has long been an admitted possibility, yet without much actual demonstrative proof of the passing of any germ from one to the other. Syphilis can undoubtedly be given by a mother to her offspring, and for years it was just as firmly believed that tuberculosis was constantly transmitted in this way. A certain reaction then took place, and it was claimed that inheritance existed, not of tuberculosis itself, but of a certain susceptibility to contract the disease later. This would appear to represent the true condition in the majority of instances; but there are a number of cases on record in which tubercle bacilli have been discovered in the tissues of fœtuses born of women suffering from



tuberculosis; and the same has been found equally true of the calves of tuberculous cows.

When we come to a consideration of the acute infectious diseases we find that children may, in rare cases, inherit the disease directly, and be born suffering from it, or may in other rare instances complete the attack while still in utero. This has repeatedly happened in the case of variola, the children being born with the marks upon them.

With regard to typhoid fever, the question has been more difficult of solution, since the symptoms are less well marked. Yet cases of apparent typhoid fever in the new-born have been reported by Charceley, and Hastelius found lesions strongly suggesting the disease in a still-born child of a mother dying from typhoid fever.

The detection of the germs being always a difficult matter, the application of the new serum test of Pfeiffer and Widal in the case of the foetus and the new-born is of great interest. As yet but little has been accomplished in this direction. Widal and Sicard obtained the reaction in the blood of the young born of a rabbit which had been inoculated six days before. Chambrelent and Saint Phillippe found it in the blood of a typhoid mother, and also in that of the child born at the eighth month of pregnancy.

In this connection the following instance is of interest: An epidemic of typhoid fever occurred in a family, and the father, mother, and three children, the oldest being five years of age, were brought to St. Agnes' Hospital. On November 18, 1896, the mother, still ill with fever in the hospital, gave birth, at term, to a well developed child. It is uncertain just how long she had been ill at this date, for the attack was a rather light one; but rose spots were present on admission. It is safe to conclude that the attack was probably in the third week, when labor took place. The infant seemed healthy in every respect, except for a slight transitory jaundice. The temperature taken for a couple of days was normal; and as the infant remained entirely well, to all appearance, no further records were made. Blood was taken from the mother and from the child, but, through an error, the examination was of no value. Early in January, the child being then about seven weeks old, a second specimen of blood was obtained. Widal's test showed that in four minutes the bacilli

became much less active, and began to collect in groups, and that some little time later they became agglutinated.

The conclusion that must be drawn from this case is either that the child had had typhoid fever in utero, and recovered after a very short attack, or that the agglutinating principle had passed through the placenta from the mother to the fœtus, without the latter having contracted the disease at all. How the case should be interpreted it is impossible to determine, in the present state of our knowledge. There remains also the hypothesis that the child had imbibed the principle with the mother's milk, but this seems unlikely. Analogy to other infectious diseases, and the fact that fœtal typhoid fever does occur, as already pointed out, render the first supposition most probable, *viz.*, that the child, when born, had already had an attack of the fever.

**Hodges, J. Allison: Tubercular Meningitis.** (*Virginia Medical Semi-Monthly.* 1897. Vol. i., No. 22.)

Tubercular meningitis presents a preponderance of nervous symptoms, and is a distinctly bacillary disease—being peculiar to childhood, and usually attacking children between two and ten years of age. The membranes involved are the same as those in simple meningitis, but the anatomical lesions differ, for the latter affects the pia and arachnoid on the convexity of the brain, while a meningitis of tubercular character attacks those membranes at the base.

The prodromal symptoms are vague, and for this reason are apt to be misleading. For the sake of clearness, the author divides the symptoms into stages, for, as a rule, there is a regular sequence in them. And it is only from a contemplation of this succession of symptoms, when associated with other manifestations, that the cause of the ominous changes which occur in the latter periods is suspected and can be diagnosed.

Too great importance cannot be attached to the mode of invasion of this disease as a diagnostic point. In simple meningitis, there is a stormy onset, and a convulsion ushers in the scene; while in tubercular meningitis, the convulsion is usually one of the last acts in the sad drama. In tubercular meningitis, this period of invasion is so peculiar that it cannot be mistaken by the careful observer, if the facts which are of such import in the determination of this particular disease are faithfully elicited.

The initiatory symptoms are so indefinite as often to be decep-

tive. The child is not at once seized with a sudden illness. There is simply a gradual failing of the general health, and the only physical sign of disease is a more or less evident emaciation. This change in the condition of the child also is a variable one, being rapid and striking in some, while in others it is scarcely noticeable. In all cases, however, the emaciation at last becomes a marked feature of the case.

During the progress of the change, another symptom, which may be termed a moral change, develops itself, since it is manifested in both the habits and temper of the child; for the little patient, according to its individual temperament, may exhibit all the phases and variations of its nature. Formerly bright and playful, it now becomes morose and sluggish, or irritable and disagreeable. This change of disposition is often supposed to be a reflexed condition, due to some primary cause of disease in childhood, such as detention or some digestive disturbance; but if carefully investigated, no such causative factor is usually discovered.

This moral change in the usual life of the child is not an evanescent one, but is continuously and progressively more marked, and its development should convey a deeper significance to the experienced practitioner.

*First Stage.*—Generally coincident with the moral change, another symptom supervenes which is significant—namely, the existence of headache. This cephalalgia in these cases is characteristic, for it is violent, paroxysmal and generally localized, as evidenced by the actions of the little sufferer. Vomiting is usually associated with it, and it is not the ordinary vomiting from gastric disturbances, but the true cerebral vomiting, propulsive or regurgitative in character, unaccompanied by pain or nausea, as for instance is the vomiting observed in hepatic or abdominal disorders. These symptoms, accompanied by a mild degree of pyrexia—the temperature most usually not exceeding 100.5° F.—a slightly accelerated pulse, wakefulness, photophobia, constipation, contraction of the pupils, with possibly some hyperæsthesia of the abdomen, mark the first stage. In proportion to the intensity of this disease in individual cases will the tardy or rapid succession of the symptoms noted above be manifested; for generally in affections of the brain, symptoms of irritation and excitation appear first; but sometimes the symptoms of profound depression are initia-



tory, and this regular succession of phenomena is not so prominent. These prodromal symptoms of the first stage may extend over a period ranging from one to several weeks.

*Second Stage.*—The second stage of the disease (always supposing there is a regular succession of phenomena), ushers in more pronounced symptoms, and there appears to be an increase in their intensity. The temperature rises slightly, and a peculiar embarrassment of respiration is noticeable; the patient sighs deeply and long. The pulse now becomes remarkably slow, and there is generally an interference in its rhythm which corresponds to the change in the respiration. The eyes half close, and the eyeballs move slowly in a lateral direction, one or both pupils dilating. At this period there are sudden flushes of the face, and a kind of mottling appears upon the skin, over which, if the finger is drawn, red marks are left temporarily; and a sunken, retracted condition of the abdomen is evident. While these two conditions are characteristic in this affection, they are not pathognomonic. During this stage there is also developed a cephalic cry, which once heard is never forgotten. The remission in the fever, which is apt to occur now, is often deceptive and may lead to false hopes. Increased somnolence becomes apparent toward the close of this stage, and in reality is but the beginning of the end.

*Third Stage.*—The foregoing train of symptoms is but introductory to the last stage, where coma is the prominent feature, overshadowing all the other conditions. Evidences of vital depression and of organic implication are now more marked, and slight twitchings around the mouth and eyelids, or a convulsion, followed by ptosis, strabismus, or paralysis of the face or extremities promptly follow. The head may become retracted, and all the other symptoms increase in severity until the fatal termination ensues, after a period of three or four weeks.

Not all cases pursue this definite course, for in some children the symptoms may be much milder, while in others there may be so much somnolence from the beginning as to obscure many of them. In fact, to say anything positive about the course of this disease is impossible; it is sometimes acute, sometimes chronic, sometimes presenting long intermissions, and sometimes steadily progressive. Even the manner of onset may vary much, and the different stages or periods so coalesce as to be scarcely distinguishable from each other.

*Differential Diagnosis.*—From the foregoing, it is evident that an absolutely positive diagnosis of tubercular meningitis can be made only when a full and true history of the successive phenomena of the illness can be obtained; or when the symptoms of a tubercular meningitis supervene upon tubercular lesions that have previously existed in other organs. Some of the diseases with which tubercular meningitis may be confounded are:

In simple meningitis the prodromal symptoms are wanting; the history of tuberculous infection or predisposition is lacking; the onset is more sudden, and the course is more quickly run.

When cerebro-spinal meningitis occurs endemically or sporadically, the vaso-motor disturbances occur earlier, and the characteristic eruption is apt to be present.

The hydrocephaloid state in many particulars is so similar to a tubercular meningitis that it can be differentiated only by a history of some gastro-enteric disturbance prior to the super-vention of the brain symptoms.

The history of malarial infection, or the proper administration of quinine, usually solves the question of diagnosis; otherwise, an examination of the blood must be made for the specific germ.

In typhoid fever the symptoms of a cerebral character very closely simulate a tubercular meningitis, especially if the temperature curve be atypical, as is frequently the case. A microscopical examination of the blood is often necessary as a crucial test; but, clinically, it is always well to remember that in typhoid there is no peculiar or rhythmical disturbance of the respiration, as in meningitis from a tuberculous infection.

**Martin, C. F.: So-called Idiopathic Dilatation of the Large Intestine.** (*Montreal Medical Journal*, 1897. Vol. xxv., No. 9.)

The author believes that there can be no question that in the majority of these cases some mechanical hindrance to the evacuation of the large bowel, is the main immediate etiological factor; and though these may frequently be antenatal, it could scarcely be regarded as associated with changes which have arisen in the earliest days of life in the embryo.

The cases of idiopathic dilatation of the colon or sigmoid which occur, might perhaps be classified as follows:

1. Those in which the symptoms occur at birth, either as

constipation alone, or combined with distension of the abdomen (Rolleston's congenital cases). Of these there are very few on record, apparently only four cases about which there can be no doubt, viz., those of Generisch, Osler, Hirschsprung, and Peacock. His own case is also to be herein included.

2. Those in which the symptoms develop shortly after birth (*i.e.*, within a few months), or where it is stated that "from earliest infancy" there was one or another sign present.

These cases are more numerous, and though they cannot be definitely called congenital, they so closely resemble them as to be practically identical, and are more than probably of congenital origin. These are recorded by Walker and Griffiths, Eisenhart, Hughes, Formad, Osler, Bristowe, Gee (2 cases) and Rolleston.

3. Those developing after several years, and associated with no pathological lesion. Such is Gee's, in which the symptoms appear to have commenced only after four years of age.

4. Those cases which occur only in adult life, which can likewise be explained only as idiopathic (*i.e.*, with no organic lesion to suggest a clue as to the cause). Of these there are many cases, too numerous to mention, *e.g.*, those of Herringham and Bruce Clarke, Little and Callaway, Hadden, Lewitt, and many others.

A table is given in which the cases reported are included.

As is to be observed from this table, the cases which have certainly arisen coincident, with birth or before it, are but five in number, while at least eight are recorded where the onset of the symptoms appeared so soon after birth that it is difficult to ascribe to these an origin different from the five undoubted congenital cases. In several instances the conditions are so similar in all respects that one is scarcely justified in regarding them in the light of non-congenital (*i.e.*, acquired) cases in contradistinction to the five instances mentioned.

So far as constipation alone is concerned, it is difficult to believe that this in itself is the cause of the malady, but it is much more probable that the gas developed in the intestine would equally well induce a kinking and functional closure of the intestines, particularly when with a lax meso-colon the bowel may become twisted. The cause is obviously purely mechanical, and while numerous theories have been advanced, in practice none have proved entirely satisfactory, as applying to every case on record.



Among the most commonly cited of these are the following:

1. An unduly lax meso-colon, by means of which there arise kinks in the bowel, consequent constipation, and gradually increasing distension.
2. Immoderate or anomalous development of the tissues of the sigmoid flexure or colon.
3. Undue length of the sigmoid flexure in early infancy, combined with habitual constipation.
4. Defective innervation of the intestinal muscles.
5. Spasm of the rectum.
6. Adhesions.
7. Colitis, and hence weakened intestinal wall.
8. Contracted meso-colon at one place.

An extended report is given of a case of this character occurring in a child of three and a half years, together with the autopsy report.

The *diagnosis* rests upon a combination of symptoms and signs, the main features being:

1. Constipation in early infancy, sometimes with intermittent diarrhœa.
2. Early distension of the abdomen with exacerbations and remissions according to the success in evacuating the flatus and intestinal contents.
3. Evidence of a dilated colon from physical examination.
4. Absence of any constriction at the anus or in the rectum. Sometimes emaciation.
5. Pain and tenderness not usually marked, except when copious enemata are employed.

Rolleston has pointed out that the condition is much more common in males, a fact confirmed by the additional cases from the literature which have been included in the above table.

The *prognosis* is most grave, not a single case being permanently cured. The case under Dr. Osler, which was operated upon, and an artificial anus created in the dilated sigmoid, remained well for nearly two years, but it appears from references made to this by Dr. Rotch, that the symptoms again returned and the patient shortly afterwards died, a second operation being performed. Sometimes death is very sudden and the autopsy fails to explain the reason. As a rule, however, gradually increasing constipation and distension prove so serious that nutrition fails, and either a fatal peritonitis ensues, or the patient dies

from what was referred to above as "disturbed vitality from the mechanical injury."

*The treatment* in all the cases has proved most unsatisfactory, and the usual means of purgation are believed by most authorities to only aggravate the existing conditions. In the present instance it is certain that the enemata increased the child's sufferings, rendered it much more nervous, and did little to give more than very temporary relief. Purgatives were equally useless. Massage was employed by the child's father, but was likewise found futile; in fact, Rolleston emphasizes the danger of such a method, and the liability of rupture of the bowel where ulcers have existed.

All operative measures have hitherto been unsuccessful and the various incisions and punctures produced relief for but a short time, and death resulted either from shock or peritonitis. But the rationale of an operation performed upon the enlarged intestine itself, may well be questioned, inasmuch as the paralyzed condition of the muscle wall would render the evacuation of the bowels still difficult, and it is evidently for this reason that Rolleston has made what seems an admirable suggestion, viz.:—To open the lower end of the small bowel, where there will be no obstruction to the outflow of feces and by this means to relieve the distension and accompanying symptoms.

Where any kink has formed, or where there is contraction of the meso-colon, one might expect, by relieving these conditions, to obtain a good result only in those cases where the dilatation had not become excessive, otherwise it would seem that the diseased condition induced by the stretching and hypertrophy would be irremediable.

Where, indeed, very much hypertrophy and distension have occurred and the symptoms are in no way relieved, it may truly be said that the large intestine where affected is to all intents and purposes a foreign body, and it may, therefore, be reasonably considered whether total extirpation of the affected portion is not commendable, and whether an operation for intestinal anastomosis could not easily be performed between the two healthy ends remaining. This could be attempted either between the unaffected colon and the rectum, or if the whole upper colon be involved, an anastomosis could be accomplished between the lower end of the ileum and the remaining portion of the healthy rectum. In this way feces would have a ready escape and the

sphincter action of the rectum and anus would remain intact. This could be done either by means of an end to end anastomosis, or, as my friend Dr. A. E. Garrow has suggested, better still by a lateral anastomosis which would thus obviate the liability to intussusception and prolapse.

**Guthrie, Leonard G.: Chronic Interstitial Nephritis in Childhood.** (*The Lancet*, 1897. No. 3835.)

This paper is based on seven cases occurring in children between five and fourteen years, who succumbed to chronic interstitial nephritis. The diagnosis was confirmed in each case by autopsy. According to the author the most striking physical signs which attend the disease are: (1) Wasting; (2) Dryness, absence of perspiration, coarseness, elasticity, and pigmentation of the skin, together with anæmia; (3) High arterial tension and cardio-vascular hypertrophy.

The chief symptoms are: (1) Cerebral, including headache, vertigo, vomiting, and convulsions. Tetany and visual disturbances, such as amaurosis or diplopia have been noted, and also cerebral hemorrhage in two cases; (2) Gastro-intestinal, consisting of easily excited attacks of vomiting and diarrhœa, not necessarily uræmic. Sometimes there may be obstinate constipation or constipation alternating with diarrhœa, epigastric or abdominal pain; (3) Urinary symptoms, including polyuria, often associated with thirst, and sometimes with enuresis. Low specific gravity of urine, albuminuria, and hematuria; (4) Pulmonary symptoms, such as dyspnœa, bronchial catarrh, and those of pulmonary œdema have been noted. Asthma as in adults may possibly occur; (5) Cardiac symptoms, such as precordial pain, or distress with dyspnœa may arise. They do not appear to be so marked as in adults; (6) Dropsy is rarely met with in cases of interstitial nephritis, yet sometimes slight general anasarca may occur, seldom lasting more than a day or two. It usually is noticed in connection with an attack of headache or vomiting, and is associated with scanty, smoky, and albuminous urine, containing blood casts. Such attacks might be considered to mark the onset of the mischief, but the general appearance and condition of the patient show that the disease is of long standing, although the dropsy and hematuria have been the first indication of illness.

The patients are generally stunted, undersized, and wizened. The wasting is usually of long standing, and often dates from



some illness in infancy or early childhood associated with vomiting, diarrhœa, and great prostration. Wasting, when of long standing, is apt to be regarded as constitutional, or as the patients' normal condition. Advice is not sought because they are thin, but because they easily take cold, or bronchitis, and suspicions of phthisis have been aroused, or on account of headaches with or without attacks of diarrhœa or vomiting. More rarely we see them because they are always thirsty, pass large quantities of urine, and are supposed to be diabetics. With polyuria and thirst there may be incontinence of urine, and this is the first symptom which has attracted attention. Wasting is from the first associated with a peculiar dryness and deficient perspiration of the skin, which later on becomes inelastic, and when pinched up tends to remain in folds and wrinkles. This inelasticity is a most unfavorable sign. Dr. Eustace Smith has drawn attention to the condition which he rightly regards as significant of renal mischief in infants and young children. It is also met with in adults who are suffering from interstitial nephritis. Commonly the gums and conjunctivæ are singularly pale, but there is general capillary congestion which produces a dusky flush in the face and masks the anæmia.

With dryness, coarseness, absence of perspiration, and eventually inelasticity of the skin, there is often pigmentation or discoloration, varying from mere sallowness to marked bronzing usually general in distribution, sometimes intensified in patches. Pigmentation is a physical sign which, although alluded to in text-books, has not, I think, received the attention it deserves.

The author's first patient, who died, looked dirty, though not actually so. Her general appearance was that of an anæmic person who had been much browned by the sun. Here and there the skin assumed a purplish hue, due to capillary engorgement. Other cases seen since have led him to regard this pigmented appearance as a great aid in the diagnosis of interstitial nephritis.

In all the fatal cases of interstitial nephritis mentioned, with one exception, dropsy was said to be entirely absent; in the exceptional case it only occurred shortly before death and was apparently limited in extent. In an adult one is quite prepared to suspect the existence of nephritis, although there may not be the slightest sign of anasarca. But in a child all will agree that the outward and visible sign of nephritis is dropsy, and if this sign is absent one does not readily think of nephritis, although the symptoms may be precisely similar to those of the adult.

*Summary.*—(1) Toxæmia is present in all forms of nephritis. (2) The poison irritates and lowers the nutrition, thereby increas-

ing the permeability of the capillary walls. (3) It also causes spasmodic constriction of the arterioles either by direct irritation or through the vaso-motor centres. (4) The result of spasmodic constriction of the arterioles is: (a) to reduce the capillary blood supply, and (b) to produce hypertrophy of the arterioles and usually, in time, of the heart. (5) If the heart is able to meet the labor thrown upon it, the velocity of the blood stream into the capillaries is increased, while its volume is lessened by constriction of the arterioles. These conditions of the circulation will tend to lessen transudation through the capillary walls, lower intra-capillary blood pressure, and therefore control dropsy. (6) If the heart fails to meet the demand, whether in early or later stages of renal disease, dropsy is maintained in the one case and produced in the other.

**Steele, Ernest, A. T.: A Fatal Case of Purpura Hemorrhagica and Pemphigus.** (*Lancet.* 1897. No. 3842.)

The patient was a girl four years of age, who showed an extreme degree of rickets. In some respect the author regarded the case as very suggestive of "scurvy-rickets," but does not believe that that was the true diagnosis.

The illness began on the evening of June 26th, when the child seemed to be poorly and had a slight cough. On the 27th her nose bled and her gums slightly. On the 29th she developed a papular eruption on the face and limbs and was drowsy. The eruption was scanty and of a dark rose color, but there were no vesicles or bullæ. On admission into the hospital her condition was as follows: On the left side of the forehead and left cheek, the right cheek, and both arms and legs, there were numerous purple patches varying in size from a sixpence to a five shilling piece, and in the centre of many of these patches there were large circular bullæ containing dark colored serum. Both wrists and ankles were swollen, and the child cried if moved. Her temperature was 103° F., and her pulse 130. There was considerable bloodstained discharge from the nose, but the gums were not bleeding. During the day she passed a small quantity of very dark colored urine which, however, could not be saved for examination. She was very restless all day and her breathing became very hurried. The temperature rose to 106° at 10 P.M. At 1.30 A.M. on July 2d she became very drowsy, had a slight rigor, and died comatose at 2 A.M. At the necropsy, which was made twenty-four hours after death, the main lesions discovered were innumerable small hemorrhages into the lungs and a decolorized blood-clot in the right heart, which was distended, the left heart being empty and contracted; there was a decolorized clot filling the superior longitudinal sinus. The organs were otherwise healthy. The bones were soft and porous, and the ends of the ribs were enlarged.

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